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WIRELESS JAVA AIDS SERVICE EFFORT

Water supplier gains universal data access

BY CAROL SLIWA

Java's business prospects in a wireless world will be in the spotlight this week at Sun Microsystems Inc.'s JavaOne conference in San Francisco.

JAVAONE CONFERENCE

McKesson Water Products Co. will unveil a Java application that provides a real-time link between its home office and delivery truck drivers on the road. The Pasadena, Calif., company plans to let its drivers abandon log books and pagers in favor of laptop computers connected to a host system via wireless technology.

"Companies are beginning to realize [that] if you want to provide great customer service, you have to use all the assets of your company — and one of the assets is data," said Ken Dulaney, an analyst at Gartner Group Inc. in Stamford, Conn.

McKesson's laptop-based Java application will enable drivers to send and receive orders and other information, retrieve schedules that can now be changed throughout the day and communicate instantly with McKesson call center workers and other employees.

"Anyone in the company is going to have the same data to support the customer," said David Sunker, McKesson's CIO. "Water is not one of those

Wireless Java, page 95

SLOW ROAD TO WIN 2K BENEFITS

Phased rollouts delay directory, security use

BY SHARON GAUDIN

Corporate users and analysts say the long, steady migration to Windows 2000 recommended by Microsoft Corp. is the safer course to take but warn that large companies following that lead won't see any key benefits for up to 18 months after they dive in.

That's because major features in Windows 2000, such

Win 2K, page 12

Nudging Up to Windows 2000

The Windows NT to Windows 2000 migration picture is coming into focus. We revisit three CIOs who are looking at Windows 2000. Page 78

BANK SUED OVER CLIENT DATA SALE

Deal sparks outcry over privacy violations

BY KIM S. NASH

The state of Minnesota last week sued U.S. Bank for allegedly selling Social Security numbers, account balances and other sensitive customer data to a telemarketing company in exchange for commissions.

A federal official said last week that several other banks are hawking customer infor-

Bank Sued, page 14

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IT REVAMP BOOSTS DELTA SERVICE

EXCLUSIVE: *Y2K overhaul cuts $30M, deploys real-time passenger info*

BY JULIA KING AND STACY COLLETT

ATLANTA

Book a Delta flight from Dallas to Atlanta and there's an 80% chance you will arrive on time, without running up against botched reservations, bad weather or mechanical problems.

DELTA TECHNOLOGY'S KEITH HALBERT: "We'd like to get to the point where, when you go to the gate, [the only thing left to do is] get on the plane"

It's that other 20% that Delta Air Lines Inc. is targeting as part of a huge, highly unusual $250 million nationwide airport renewal program that began as a year 2000 fix-up project.

During the past 18 months, the world's third-largest commercial carrier has ripped out literally bundreds of incompatible computer systems and networks to install a single standardized, Y2K-ready information infrastructure.

"For the first time, we have systems feeding real-time information that's centered on passengers rather than internal operational functions," said Keith Halbert, vice president of customer experience at Delta Technology Inc., the airline's 2,400-person IT unit.

Internally, the airline expects the new, standardized computing utility and portfolio of customer-service applications to cut costs by about $30 million per year. Delta spends $600 million annually on IT.

On the public relations front, Delta's timing couldn't be better. As several bills — including a proposed Airline Passengers' Bill of Rights — make their way through Congress, Delta is rolling out the new applications at high-volume airports in Atlanta, Boston and Dallas/Fort Worth.

"We fly 105 million people a year, so for us, 20% means 20 million inconvenienced passengers. They're the people who get really upset, so that's who we're building these systems for," explained Delta CIO Charlie Feld.

Some analysts think it's a bad move.

"Seventy-five percent of flights take off and arrive on time. So what you're looking at is an exception process, and it's not worth investing significant amounts of capital in excep-

Delta, page 16

FEDS MUSCLE IN

POLICY-MAKING ACTIVITY in Washington seems so abstract — until you consider that it will determine what kind of encryption you can use globally and whether you'll have to collect taxes on Web sales. And — heads up! — legislation to restrain your right to sue over Y2K disasters is moving forward in Congress. *A report on the hot IT issues in the nation's capital begins on page 52.*

NOTEBOOKS

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- 10/100TX Standard NIC

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- 24X CD-ROM[1] Drive
- Integrated 56K V.90 Modem[4]
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- 3-Year Worldwide Limited Warranty[3]

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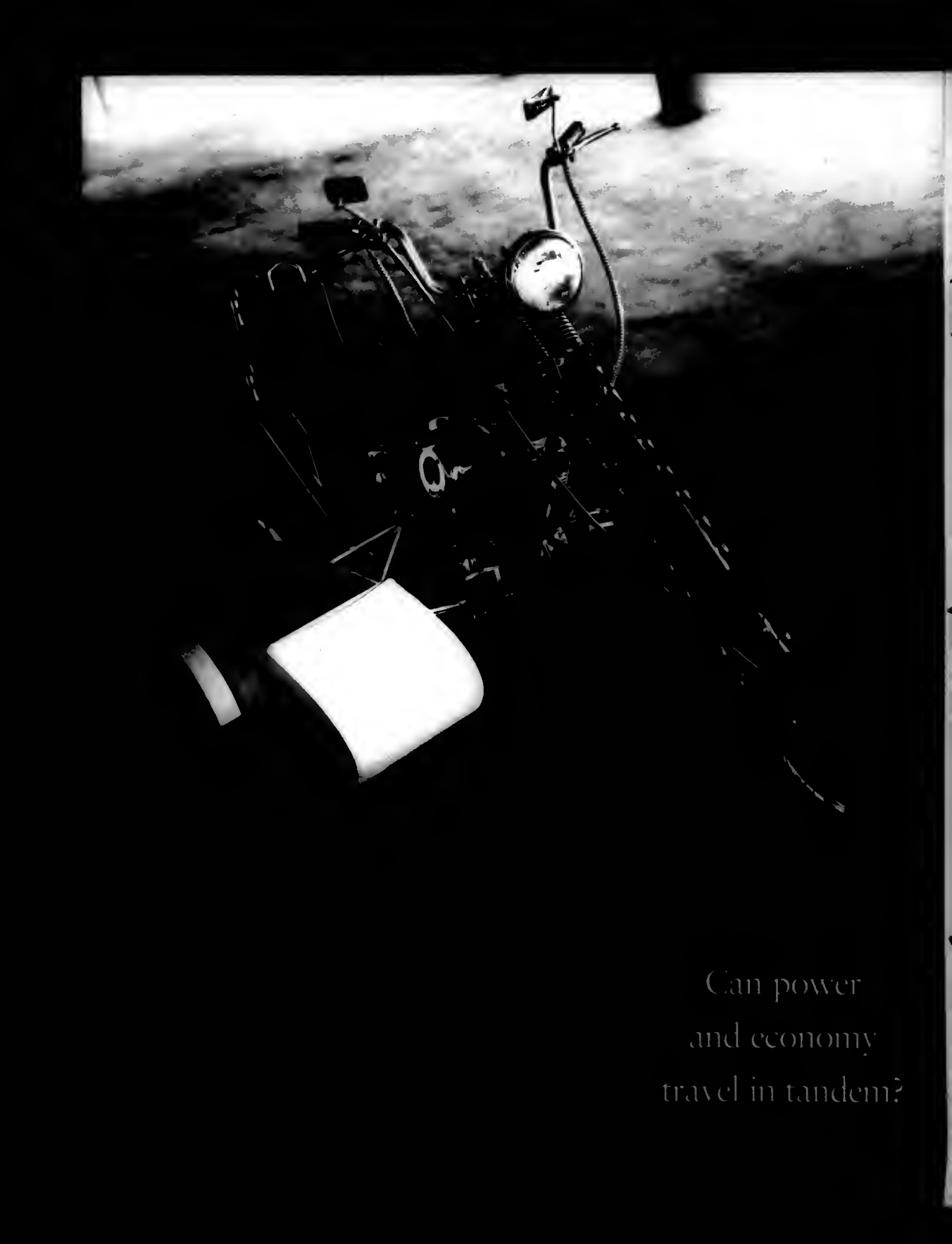

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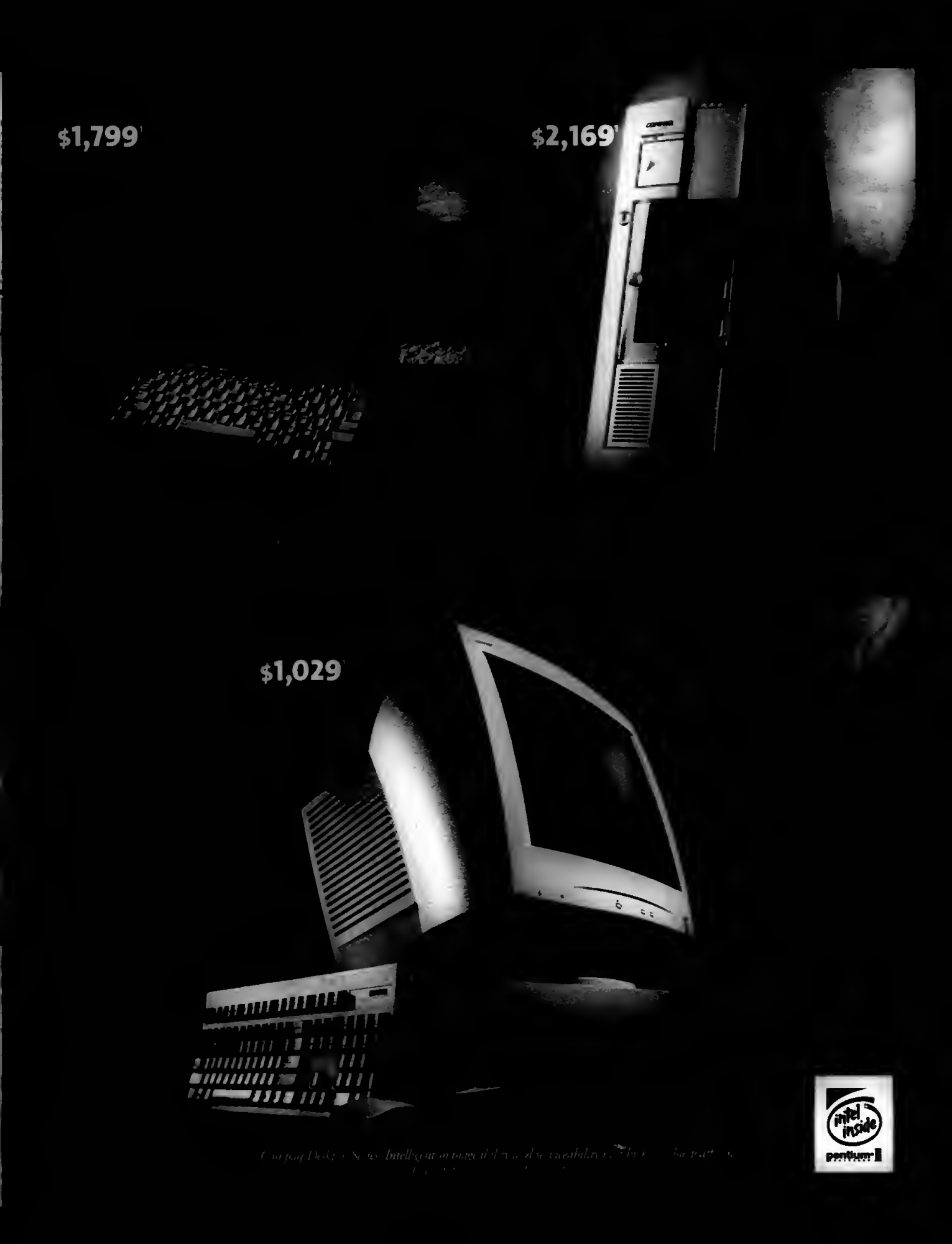
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TWO-YEAR EXPRESS

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ROAD SHOW FOR LESS

Portable video projectors for computer-generated presentations are getting cheaper, lighter and easier to use.
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6 VICIOUS WORM destroys data in fast-moving attack that mimics legitimate e-mail.

8 SONY LAUNCHES ambitious e-commerce site, built by EDS for a cut of the take.

9 MICROSOFT PUSHES rentable software, adding credibility to app service providers.

10 WIRELESS VENDORS drive toward faster, cheaper service for IP-based networking.

12 USERS UNIMPRESSED by Microsoft's pitch for unified voice/e-mail messaging.

14 JUDGE PONDERS security threat of browser built in to Windows as trial resumes.

20 RETAILERS CITE supply chain, other systems for success but struggle for talent.

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34 PACE OF CHANGE will finally match expectations when broadband is a reality, Bill Laberis predicts.

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43 STUDY CONFIRMS IT worker shortage, advises recruiters to go to school.

43 OUTTASKING ALLOWS users to do just the net management tasks they want.

44 WELLS FARGO hopes its name will draw users for new digital certificate-based e-commerce.

44 CONNECTIONS HELPED UUnet staffer launch e-business, but guts helped, too.

46 PAYROLL GIANT slays its own Y2K problem, waits on customers to catch up.

50 IT MUST MASTER customer service, profits *and* technology, Peter G. W. Keen warns.

52 GOVERNMENT DIVES into involvement in IT with regulation of Web, Y2K.

57 FEDS WITHHOLD visas to reserve hot IT jobs for candidates in U.S.

58 IT STARS don't work harder than others, they just focus on the right things.

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68 A HYBRID e-mail server and app development tool helps one company manage e-mail.

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72 Q&A: CABLETRON'S new CEO vows not to neglect the enterprise.

74 EMERGING COMPANIES: How would you like a single, itemized bill for all network services?

75 EXEC TECH: Portable projectors for computer-generated presentations.

77 QUICKSTUDY: We explain how PCI-X compares with rival bus technologies.

78 SIX MONTHS after we talked with them, three CIOs see more in NT, Windows 2000.

81 FLASHBACK: In 1972, Xerox Parc created the Alto, forerunner of the PC.

85 FOUR JAVA programmers share their career paths and thoughts with *Computerworld*.

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DELTA CIO CHARLIE FELD, ON AN AIRPORT IT ENHANCEMENT PROJECT DESIGNED TO BOOST TROUBLE-FREE ARRIVAL RATES HIGHER THAN THE PRESENT 80%
SEE PAGE 1.

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AT DEADLINE

EBay Crashes Twice

Online auctioneer eBay Inc. was still off-line at press time Friday, suffering from its second major service disruption in a week. The first outage, on Wednesday, lasted six hours; the other began Thursday night. The outages came soon after eBay launched a new site design aimed at making trading easier for users and may have been caused by a hardware problem.

Insurer To Cover Year 2000 Claims

One of the top insurers to U.S. commercial airlines said it will provide coverage if passengers are injured or their property damaged as a result of the year 2000 problem. United States Aviation Underwriters Inc. in New York, which manages a pool of aviation insurers, said it will provide insurance coverage whether or not a claim is Y2K-related.

Suit Filed vs. E-Stamp

Pitney Bowes Inc. filed a lawsuit last week against E-Stamp Corp. in San Mateo, Calif., for patent infringement on Internet postage technology. E-Stamp supplies systems that provide postage delivered over the Internet and prints via PC printers that Pitney Bowes claims are based on its own patented concepts.

Web Drug Sellers Sued

Kansas' attorney general has filed consumer protection lawsuits against seven companies for selling prescription drugs online to minors or without a licensed doctor's involvement. A sting operation revealed that a 18-year-old was able to purchase Viagra and the diet drug Meridia online.

Short Takes

AMES DEPARTMENT STORES INC. has signed IBM to a $112 million, five-year outsourcing deal to support core information technology systems . . . IBM last week said it will purchase Internet hardware maker Whistle Communications Inc. in Foster City, Calif., for an undisclosed amount.

KeyCorp Bank Portal To Host E-Commerce

Bank expands customer services to create and support Web storefronts

BY JAIKUMAR VIJAYAN

KEYCORP — the 12th-largest bank in the country with $80 billion in assets — wants to be more than just a traditional financial services provider to its customers.

This summer, the Cleveland-based company will launch an e-commerce portal site that will let its 400,000 small and midsize business customers in 14 states create Web storefronts and conduct secure, business-to-business e-commerce through them. KeyCorp will also rent software and applications needed for online payment processing and order fulfillment.

KeyCorp is an early example of a push by companies, from banks to publishers, to enter the Internet applications hosting and rental business as a way of delivering new services to expand business, said Gopi Bala, an analyst at The Yankee Group in Boston.

Unlike the costlier and more complex application hosting service of the past, the Internet offers would-be service providers a relatively cheap and easy way to deliver such services, said Thomas Kucharvy, president of Summit Strategies Inc. in Boston.

"It gives them a way to expand long-standing relationships with a broad set of their customers and participate in this whole e-commerce revolution," Bala said.

A Recognized Name

KeyCorp, for instance, is hoping that customers like the idea of having their e-commerce operations handled by the same company they have trusted to handle their core cash management for years, said Mickey Mencin, marketing director at Key Electronics Services, the subsidiary in charge of the portal.

Customers can have KeyCorp build a Web storefront for $250 and then pay a monthly charge for whatever service they access. Providing hardware, software and processing capabilities for KeyCorp will be Econex Inc., an application service provider in which Key owns a one-third stake.

Citibank is another example. The company's Global Cash and Trade group in April launched a service called Citibank Commerce in several Asian countries.

INC.COM'S MATTHEW BERK says the company will rent services to small and midsize customers

Citibank Commerce will host Web sites and product catalogs for business customers. It will also provide transaction capabilities for business-to-business order processing, invoice inquiry and payments. All the hardware, software and network bandwidth needed for the service will be hosted by Citibank.

The company will launch the service in the U.S within a year.

The examples go beyond banking. Boston-based magazine publisher *Inc.* has set up a subsidiary that this fall will rent out affordable Web-based tools and services for e-mail, messaging and scheduling and sales force automation applications to small and midsize businesses, said Matthew Berk, vice president of technology at inc.com.

Oracle Courts the 'Big 5' Consultants

Vendor's change in stance welcomed by users seeking independent voices

BY CRAIG STEDMAN

In ao about-face, Oracle Corp. plans to start cooperating with the Big 5 consulting firms instead of competing against them. And users of Oracle's business applications who like the sound of independent voices are glad to hear it.

For example, Pittsburgh-based PPG Industries Inc. has relied on Oracle's consultants to help manage an ongoing installation of PPG's payroll and human resources software. When the project started two years ago, other consulting firms didn't have much experience with the applications, said Lyle Smith, director of global human resources information systems at PPG.

But things have changed since then, Smith said. If that call was being made now, PPG — a $7.5 billion maker of glass and other products — might look beyond Oracle Consulting to get "more of an independent review" of its plans, he said.

Until now, Oracle has tried to hang on to as much consulting business related to its applications as possible. It built up an 18,000-person consulting staff — far larger than those of SAP AG and other enterprise resource planning vendors.

But Keith Costello, head of marketing at Oracle Consulting, said that strategy led the Big 5 consulting firms to recommend rival applications to many users. Oracle now wants outside consultants to be involved "in every single project" and is talking with the Big 5 about working together on deals, Costello said.

Consulting firms "in a lot of cases really are the ones out there making the sale," said Michael Prince, CIO at Burlington Coat Factory Warehouse Corp. in Burlington, N.J. "It's pretty essential that vendors like Oracle belly up to them."

Burlington Coat Factory runs Oracle's financial applications and is now looking at installing its human resources system. Prince said that project might be big enough to warrant mixing Oracle consultants with the independent contractors the retailer now calls for help with software upgrades.

Oracle's new approach appears to be a more realistic way of dealing with consulting firms and systems integrators, said Jim Holincheck, an analyst at Giga Information Group Inc. in Cambridge, Mass. "But they have a credibility gap a mile wide" with those companies, he said.

Corrections

- A May 17 Technology section story ["FedEx Bets on Internet2 for Crucial Purchasing Tool," page 38] mistakenly implied that FedEx could save hundreds of millions of dollars per year through its use of a new Web-based procurement system. The FedEx official was referring to the savings any company might expect from such a system, not the savings FedEx itself expects from its Web-based procurement system.

- A subheadline on a May 24 News story ["J. D. Edwards ERP Not All-In-One," page 1] incorrectly stated that some of J. D. Edwards & Co.'s OneWorld enterprise resource planning software must also use its AS/400-based green-screen applications. The AS/400 applications are necessary only for some functions that haven't yet been ported to the client/server platform, but they aren't a requirement for running OneWorld.

- A May 24 opinion column ["Uncle Sam's Secret Cryptography Plan," page 38] misspelled the name of the National Security Agency.

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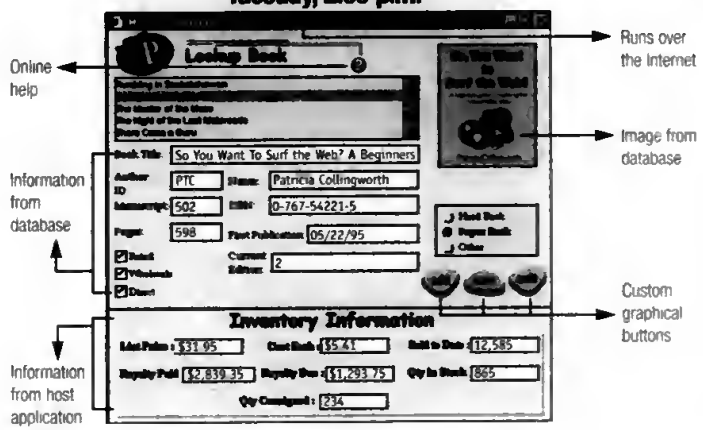

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Internet Worm Destroys Data

ExplorerZip.worm gobbles hard drive files when opened in e-mail

BY ANN HARRISON

A FAST-SPREADING Internet worm called W32/ExplorerZip.worm, which propagates via e-mail and destroys files on a PC's hard drive, swept through tens of thousands of Microsoft Corp. Outlook and Exchange packages last week, causing some users to shut down their e-mail systems. The FBI is investigating.

On June 10, the company intercom at AT&T Corp.'s headquarters in Basking Ridge, N.J., alerted employees during lunchtime that the worm was spreading and advised infected users to immediately shut down their PCs. Of the 3,000 workers at the site, approximately 200 were affected, said spokesman John Heath.

Heath said he didn't hear the warning in time and inadvertently opened the attached file that contained the worm. "In most cases, I'm pretty suspicious, but this is tricky because you see a message from someone you know, and I fell for it," he said.

Heath said affected workers lost Microsoft Word, Excel and PowerPoint files. AT&T's information technology department installed the McAfee antivirus software within 90 minutes to block the worm, he said. "No matter who the sender is, take a second look at the message you get and make sure it's not a threat to your system," Heath said.

Other companies, like General Electric Co., received early warnings that helped minimize the damage. GE public relations manager Pam Wickham said e-mail servers at the company's Fairfield, Conn., headquarters were shut down for a few hours on June 10. But, she said, they were back up by midafternoon after the company installed an update of Symantec Corp.'s antivirus software. Wickham said the Symantec site had posted a warning on June 6, and GE's IT managers were watching for it. She said she was uncertain how many of the 500 workers at the site and other GE offices were affected. "We did have some minor data loss, but nothing on the scale of what's been going on around the country," she said.

Foreign Infections

According to antivirus software vendor Network Associates Inc. in Santa Clara, Calif., firms in the U.S., Europe and Asia last week were reporting infections that deleted large amounts of data. "Our researchers have watched numerous attempts by virus writers to combine the rapid spread of viruses like Melissa with bad payloads like the Chernobyl virus — and this is the first example," said Wes Wasson, director of security product marketing at Network Associates.

Unlike the Melissa virus, which e-mailed itself to recipients via a user's address file, W32/Explorer.worm automatically replies to legitimate inbound e-mail. PCs are infected when users open e-mail attachments that appear to be a reply from someone to whom they have sent mail. The messages have the same subject line as the original message.

When a user clicks on the attached file, the worm deposits the file explore.exe and modifies the Windows registry file, WIN.INI. The worm's payload then searches the user's local and networked drives for a variety of file types and deletes them, leaving a zero-byte file. (see chart above and related story, page 28).

Wasson said a sign of infection is a volume increase on Exchange servers. Users can also check their e-mail outbox to see if mail has been sent without their knowledge.

Microsoft said it's working to learn everything it can about the virus to help inform and protect customers.

AT A GLANCE

Worms and Viruses

MELISSA VIRUS

Type: Computer virus designed to attack files on a single PC

Replication method: Prompts Microsoft Outlook to send infected document to first 50 addresses in address book

Damage: Overwhelms corporate e-mail servers

CIH, OR CHERNOBYL, VIRUS

Type: Date-triggered computer virus designed to attack files on a single PC

Replication method: Executes infected files sent via e-mail or on the Web

Damage: Erases entire hard drive and attempts to overwrite BIOS

W32/EXPLORERZIP.WORM

Type: Internet worm designed to infect PCs on a network

Replication method: Sends infected e-mail attachment as response to incoming mail

Damage: Will delete .c, .cpp, .asm, .doc, .xls and .ppt files from local hard drive

MORE ONLINE

For publications, FAQs and virus resources, visit our Web site.
www.computerworld.com/more

Web Technologies Alter Outsourcing Deals

Contracts involving newer apps call for different services

BY SARA COLE-GOMOLSKI

Web and e-commerce applications are changing the face of outsourcing contracts.

According to users, outsourcing deals that involve online applications are likely to be shorter and contain a multitude of service levels and possibly multiple vendors, compared with their mainframe brethren. Mainframe deals often stretch out for five years or more and have relatively straightforward service agreements for system uptime guarantees.

HILTON HOTELS' JOE DUROCHER says service levels in the old contract didn't make sense in the Web arena

The types of services that companies are looking for are different in the Web arena, too. Special provisions for security, network uptime, capacity planning, customer support and online marketing are more likely to be part of the deal.

According to Updata Capital Inc., an investment banking firm in Holmdel, N.J., the bulk of information technology services work — 33% — still comes from mainframe assignments. But IT outsourcers are increasingly involved in Web-based development and e-commerce, which combined accounted for 12% of the $40 billion outsourcing industry last year.

Joe Durocher, CIO at Hilton Hotels Corp. in Beverly Hills, Calif., said he just renegotiated his outsourcing contract with Litton Enterprise Solutions in Woodland Hills, Calif., in part because the service levels in the old contract didn't make sense in the Web arena.

When the original contract was signed in 1993, the company ran on mainframes. As a result, the service levels were simple — pretty much 99.9% uptime across the board. "All that became very irrelevant" as applications were distributed across several platforms, Durocher said. What's more, under the old contract, there were no service levels tied to the management of Hilton's Web site, which has become mission-critical. Today, the company operates in a much more heterogeneous environment, with a mixture of Unix and Windows NT servers.

"We've defined a matrix of service levels — everything from [around-the-clock] uptime with a five-minute recovery to just make sure the power is on," he said. The new contract also includes service levels for the company's Web site.

E-commerce applications have also made it less likely that companies will deal with just one outsourcer. Many users now hire firms to build their Internet applications, even if they have dealings with larger firms, analysts said.

Sebastian International Inc., a maker of hair care products in Woodland Hills, Calif., has outsourced the maintenance of its enterprise resource planning system to Plaut Consulting Inc., a large Waltham, Mass.-based outsourcer.

But Dianne King, Sebastian's IT director, said she expects to bring in a boutique consultant to build an extranet that will connect to distributors.

"Smaller firms appeal to us because they listen to what we need," King said. E-commerce is also making five-to-10-year contracts a thing of the past.

"Three years was the longest time period I was comfortable with," said Jeremy Jaffee, vice president of e-commerce at Liberty Financial Cos. in Boston.

Web technology changes too fast to sign a contract any longer than that, he said.

MORE THIS ISSUE

How out-tasking network management works. See page 43.

Oracle powers 10 of the top 10

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BRIEFS

Cabletron Loses Execs

Two more Cabletron Systems Inc. executives resigned last week: John D'Auguste, president of operations, and Allen Finch, vice president of worldwide marketing. A spokesman said both left to pursue other opportunities.

Symantec Forms Internet Unit

Symantec Corp. will spin off its Internet Tools division into an independent company aimed at serving the corporate market with e-commerce software and Web-enabling technology. Symantec plans to form the new venture in the next three to nine months, the company said last week.

Supply Chain Tools

i2 Technologies Inc. and Manugistics Group Inc. – archrivals in the supply-chain planning business – plan to separately announce e-commerce applications this week. i2, in Irving, Texas, will announce software for selling products via the Web and setting up online marketplaces. Rockville, Md.-based Manugistics will expand its line of planning and collaboration tools.

PeopleSoft Eyes Web Procurement

Pleasanton, Calif.-based PeopleSoft Inc. last week said it plans to resell Internet-based procurement software developed by Commerce One Inc. in Walnut Creek, Calif. PeopleSoft also is making an $8 million equity investment in Commerce One as part of the deal.

McCain Bill On Tap

The U.S. Senate is expected to approve Y2K liability-limiting legislation Tuesday championed by Commerce Committee Chairman Sen. John McCain (R-Ariz.), but probably not by a veto-proof margin, legislative sources predicted. A White House-backed version of the measure was rejected 57-41, last week. McCain Bill backers said the legislation was too weak; critics said it would have all but eliminated pro-

Sony Taps EDS to Run Web Operation

Sony to pay outsourcer cut of online sales

BY JULIA KING

SONY DEVELOPMENT Corp. hired more than 1,000 people to build and staff Metreon, its four-floor, 350,000-sq.-ft. entertainment and shopping center that will open later this week in downtown San Francisco.

But online, Electronic Data Systems Corp. — a relative late bloomer in the garden of e-commerce services — is handling virtually every detail of Sony's metreon.com Web site. That includes everything from designing the interactive games at the site to gift-wrapping and shipping the 1,000 products shoppers will be able to purchase online.

SONY'S HARLAN BRACHTER: EDS agreement "takes the burden off of us"

Even more unusual is the fact that Sony hasn't paid a dime for the six months EDS spent designing and building the Web site. Instead, the IT service giant's 2-month-old E-Business Solutions unit will get a cut of the online sales in what EDS said will likely be the first of many such deals.

"One of the reasons we partnered with EDS was their offer of a soup-to-nuts kind of operation. It takes the burden off of us," said Harlan R. Brachter, senior vice president of retail development at Burbank, Calif.-based Sony Development, the parent of Sony Electronics and other Sony brands.

Staffing Constraints

"We weren't ready to invest an entire staff to do all of that. By working with EDS, we're able to piggyback on to systems they already have in place," Brachter said.

EDS developed metreon.com using Microsoft Corp.'s e-commerce products. It will host the site on five servers at EDS headquarters in Plano, Texas.

EDS is teaming with ASD Systems Inc., a distribution services company in Texas, to process and fill metreon.com's online orders.

Allied Buys Honeywell; Approaches at Odds

Honeywell corporate office faces cutbacks

BY STACY COLLETT

The $14 billion merger last week between aerospace giant AlliedSignal Inc. and control systems leader Honeywell Inc. may have joined complementary businesses, but the companies' information technology systems are a mismatch, according to executives close to the companies.

Morristown, N.J.-based AlliedSignal runs its IT department "lean and mean" while keeping most operations in-house, said Eric Singleton, a former vice president of IT at AlliedSignal's automotive group. He left the company in April 1998.

Honeywell, meanwhile, outsources 40% to 50% of its IT operations, said spokesman Pearse O'Loughlin. Data center management is outsourced to Integris, the integration and customer services division of Paris-based Bull Corp.; desktop support is "insourced" to Honeywell's Industry Control division in Phoenix. Voice and data networking is outsourced to AT&T Corp.; MCI WorldCom Inc. handles remote access networking.

The merger is supposed to save $500 million through cost-cutting measures, including eliminating 4,500 jobs, or about 3.6% of the combined workforce. Honeywell's Minneapolis headquarters will be closed, displacing 1,500 workers, including 185 IT staffers. An integration team will decide where operations can be consolidated. But Singleton said not to expect a quick overhaul.

Workable Marriage

"Allied is a process-centric company. I can't see them making a sweeping decision. The two [companies] could exist in harmony for years and still produce products," Singleton said.

An AlliedSignal spokesman declined to comment on the merger.

JUST THE FACTS

IT Mismatch?

AlliedSignal:

- Uses SAP applications for manufacturing and finance
- In-house management of most IT

Honeywell:

- Uses Oracle applications for manufacturing and finance
- Outsources 40% to 50% of all IT

Especially difficult may be any attempt to combine the two companies' enterprise resource planning systems. After an internal survey found 29 different manufacturing systems in use, AlliedSignal last year went to a single, SAP AG R/3 package.

Honeywell runs Oracle Corp. financial and manufacturing applications and is planning an upgrade to Version 11i next year, said Sig Lygre, Honeywell's IT leader on the Oracle implementation team. The merger is expected to close in October.

IBM Signs $8B Deal With Acer

Says it wants to boost sales in Asia

BY MATT HAMBLEN

IBM last week announced another huge, seven-year technology alliance, this one with PC maker The Acer Group in Taiwan that's worth $8 billion to IBM.

Analysts noted the similarity of the deal to IBM's seven-year, $16 billion pact with Dell Computer Corp. announced in March [CW, March 8].

Analysts said the deals are IBM's way of bolstering declining revenue in the PC area. IBM said the Acer deal will help it sell its products in Asia.

Acer will buy hard-disk drives, processors, networking and display technology from IBM for use in its servers, desktops and laptops, officials said. Acer, in turn, will sell $1 billion worth of terminal displays to IBM, according to Acer officials.

Credibility Factor

PC administrators said the deal could give them more reasons to consider purchasing Acer products, even though Acer isn't viewed by many companies as a top-tier choice. Analysts and users said Acer's PCs aren't as reliable as other brands and that it doesn't have a support network to handle the needs of businesses.

"The IBM deal will make Acer more credible but still won't put them in the top group of PC makers we deal with," said Charles Cook, director of information systems at National Casein Corp. in Chicago, an adhesives maker. "When it comes to buying PCs for business, I don't hear them come up at all."

Cook said he has tested Acer PCs but didn't find them durable enough.

Rob Enderle, an analyst at Giga Information Group Inc. in Mountain View, Calif., said the IBM alliance "will help Acer get its foot in the door" at U.S. companies buying PCs.

Microsoft Sets the Stage for Renting Apps

BY BOB WALLACE AND KIM S. NASH
ATLANTA

With a string of recent investments in telecommunications and online companies, Microsoft Corp. is paving the road for a new way to pitch its software: as rentable applications that users pay for by the month or year.

Microsoft President Steve Ballmer drove that point home to the global telecom industry at last week's Supercomm '99 show here, as he talked about key initiatives that Microsoft is launching to drive widespread use of applications hosted in service provider networks.

"The future of our business and telecommunications are increasingly linked," Ballmer told the largest annual U.S. gathering of domestic and international telecommunications equipment, software and service providers.

In a show of its commitment to teaming with providers, Ballmer noted that Microsoft has already cut deals with Internet service providers Verio Inc. in Englewood, Colo., and Concentric Networks Corp. in San Jose to house the vendor's new Office 2000 application suite in their networks.

Sold Out

Microsoft needs to explore rentals because with its huge market share, "they pretty much have sold to most of the people they're going to sell to," said Scott Smith, president of Tera Group LLC, a consulting firm in McLean, Va. "Application hosting is a way to get down market to medium-sized or smaller companies that might not have been traditional customers."

To support the overall effort, Microsoft last week rolled out a Windows NT-based Active Operations Support Systems package designed to drive the creation of Windows-based applications by software developers for service providers. It also teamed with others to develop the NT-based communications system unveiled here.

Ballmer said Microsoft has set up a special group to prepare NT as the platform for service providers to use to deliver hosted applications and other new services. "But we're far from done, and have a lot of work to do increasing the reliability, fault tolerance and high availability of NT," he said.

Hosted applications present other key challenges, analysts said. "If I were pressed to name a threat to Microsoft, it wouldn't be Linux or the antitrust case. It would, in fact, be the application-hosting phenomenon," said Dwight Davis, an analyst at Summit Strategies Inc. in Seattle. "It can potentially rewrite ground rules for how software is sold, purchased and deployed."

Microsoft is also reassessing its licensing structure for applications to determine if changes need to be made to accommodate the service-provider-hosted applications business [CW, June 7].

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Wireless Deal Will Mean More for Less

Faster networks at cheaper cost in store with Sun-Motorola pact

BY MATT HAMBLEN

USERS STAND to gain from greater bandwidth and cheaper wireless services that ride across network equipment that Motorola Inc. and Sun Microsystems Inc. last week said they will build.

The wireless gear, based on IP, will be sold to wireless carriers possibly by 2001. By then, the number of wireless standards may be reduced to two or three, analysts said.

"Wireless networks connected to handhelds could just revolutionize workflow," said James Diamond, a technical consultant at Nationwide Insurance in Columbus, Ohio. Nearly 500 salespeople use handheld computers to update sales data for Nationwide, using dial-up modems. Having wireless for handhelds could cut out synchronization time.

"That's five times a day for me," Diamond said.

The current lineup of wireless services has been hampered by limited capacity and geographic coverage, which has limited their popularity and restricted early users from sending sizable amounts of data.

Security Concerns

Security over wireless is another concern, said Greg Wood, technology planner at American Airlines in Dallas. He's considering a variety of in-flight, handheld applications, some that might operate over wireless networks (CW, May 24).

"Ubiquitous access to wireless data is a long way off, but this announcement shows there are a lot of big companies looking at these networks," said Michael Cheng, an analyst at Banc of America Securities in San Francisco (see related story far right).

Sun, in Palo Alto, Calif., and Motorola, in Schaumburg, Ill., announced a 10-year, nonexclusive deal worth up to $1 billion to provide wireless gear to network providers based on IP. Such networks would provide IP voice, data and video transmissions. Trials of the gear should begin next year.

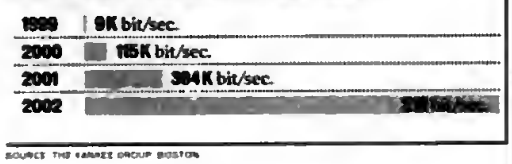
In the long term — perhaps five years — analysts believe large companies will port data running over wireline networks using IP to wireless with minimal problems. The advantage is the complete flexibility by end users to receive data from the Internet as well as from corporate databases on any devices, including smart phones.

Motorola in February joined with Cisco Systems Inc. to announce it would develop wireless IP-based switching gear. Analysts said all the major networking players, including Nortel Networks and Lucent Technologies Inc., are working quickly to develop new wireless network products (see related story below).

The bandwidth concern is quickly being addressed by wireless vendors. While most voice and data moves at 9K bit/sec. over wireless today, it could hit 2M bit/sec. in two to five years, analysts said (see chart).

"It's hard to know if the Sun-Motorola deal will speed the arrival of faster wireless bandwidth, but they are clearly the kind of powerhouses that can make things happen at a more rapid pace," said Mark Desautels, managing director at the Wireless Data Forum in Washington.

Wireless Data Rate Projections



SOURCE: THE GARTNER GROUP, BOSTON

Nortel's Voice/Data Plan Piques Interest

But Supercomm attendees say they'll move to IP networks slowly

BY BOB WALLACE
ATLANTA

Several large users last week expressed interest in Nortel Network's plans to support voice and data traffic over a single network, but said they would move toward a converged network slowly.

That's because they don't yet see strong business benefits or a compelling reason to move away from their separate voice and data networks, except at small sites.

At the Supercomm '99 telecommunications show here, private branch exchange (PBX) giant Nortel detailed 11 new products and enhanced wares designed for central sites, branch offices, home offices and call centers, many of which use Internet technologies. The products will ship during the next year.

Nortel's portfolio will include PBX upgrades that the company said preserve 75% to 80% of a system's investment. It will also include IP PBXs, low-end Windows NT-based systems, IP telephones and applications to manage the devices.

"Most network managers break out in a cold sweat at the mention of replacing their tried-and-true PBXs with new IP systems, but Nortel has given them options for moving to IP at their own pace," said John Morency, an analyst at Renaissance Worldwide Inc., a Newton, Mass., consultancy. Nortel's plans position the company ahead of its major competitor, Lucent Technologies Inc., he said.

Steve Garner, information technology manager at the Bank of Montreal, said, "I don't know if there's a business driver here, but these products do represent the next phase of IP technology with the promise of reducing costs." The company, with 13 Nortel PBXs, may start a lab trial of products next spring.

Countrywide Home Loans Inc. is initially considering convergence at remote offices. The firm is contemplating replacing its key telephone systems at up to 600 branch offices with Nortel's new PC-based IP telephone system because the new boxes offer data routing support, said Michael Spalter, a senior vice president at the Simi Valley, Calif., firm. "Once the reliability and quality of the NT platform come up, there's all sorts of opportunities to add value while reducing maintenance and complexity of connectivity," Spalter said.

At Frontier Communications in Southfield, Mich., the IT group put the brakes on running voice over the data network. "They want to know how much voice we're talking about and don't want us bombarding their network with [new] traffic and sucking up too much bandwidth," said Tim Conley, a telecommunications staffer at Frontier. Conley and Garner were split on whether the PBX upgrade, which hasn't been priced yet but is supposed to preserve most of the system investment, is attractive.

Conferees: Wireless Is Way To Go

Technology is key for workers in the field, strategic apps

BY BOB WALLACE

Representatives of several large corporations attending the SuperComm '99 telecommunications show in Atlanta last week agreed on the importance of wireless technology for communicating with remote employees.

"We need greater wireless bandwidth to get text and graphics to and from our field workers so we can restore power faster and improve customer service," says Jeff Hafer, who works in telecommunications engineering at GPU Energy, a utility in Reading, Pa.

FDX'S ROBERT Carter says, "We'd like to take our [wireless] network a step further coverage-wise by joining ours with those of other providers

The company wants to use wireless technology to send workers maps to help them get to power stations quicker as well as graphic diagrams of systems they'll be working on. "The graphics issue is a big problem," he said.

"Air is quite valuable nowadays," according to Robert Carter, chief technology officer at FDX Corp. in Memphis, the holding company for Federal Express Corp. and related companies.

FedEx started buying wireless capacity more than 15 years ago, a move that laid the foundation for its innovative fleet communications and package tracking systems.

"We'd like to take our [wireless] network a step further coverage-wise by joining ours with those of other service providers," Carter said.

It was the only way we could photograph our latest router.

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Which is exactly why major ISPs and carriers can rely on the AXI 520 for the most demanding backbone applications.

ERICSSON

Microsoft Platinum Push Unlikely To Spark Unified Messaging Market

Tech may not be ready for breakthrough

BY DOMINIQUE DECKMYN

MICROSOFT CORP. is positioning its forthcoming Platinum server as a platform for unified messaging. Analysts agreed that the move makes sense for Microsoft, but many corporate users — who have been slow to embrace unified messaging — seem unlikely to be swayed.

At Supercomm '99 in Atlanta last week, Microsoft said it would provide anytime/anywhere access via phone or other devices to a single in-box containing e-mail, voice mail, faxes and pager messages. But the company will leave it to other vendors such as Lucent Technologies Inc., Nortel Networks and Active Voice Corp. to deliver those services on top of Platinum, the next generation of its Exchange messaging server. Platinum is in a limited beta release; it's expected to ship early next year.

Though several vendors, including Lucent, already offer unified messaging products based on Exchange, Platinum will offer significant improvements in that area. For instance, the Web Store, a key component of the Exchange upgrade, will be designed to store both e-mail and voice messages (as well as other data types), potentially making for easier management.

Come One, Come All

Vendors that are lining up behind Windows NT, Windows 2000 and Platinum as a unified messaging platform:

VENDOR	ANNOUNCEMENT
Lucent Technologies	Unified Messenger based on Exchange, porting to Platinum
Nortel Networks	Will extend CallPilot Unified Messaging system to support Platinum as a messaging store; will use Active Directory
Active Voice	Has based its Unity unified messaging product on Exchange, porting to Platinum

Steve Robins, an analyst at The Yankee Group in Boston, said it makes sense for Microsoft to extend Exchange by playing up its traditional strength as a messaging server — the area in which it has been most successful competing against Lotus Development Corp.'s Domino. A spokesman said last week that the company isn't ready to discuss its plans for unified messaging.

Doubts remain about whether unified messaging is ready for a breakthrough with corporate accounts. "It could simplify things for people who are mobile, but what's the benefit for the rest of us?" Robins asked.

Jonathan Horvath, network administrator at access control security company Lenel Systems International Inc. in Pittsford, N.Y., receives his voice mail in his Exchange inbox thanks to a unified messaging server from Seattle-based Active Voice.

When Lenel Systems was forced to close this past winter because of a snowstorm, Horvath was able to access the voice-mail system remotely from a browser and record a new greeting to inform callers of the situation. However, accessing voice mail remotely from the Exchange server can make for choppy playback, Horvath said.

Other Exchange users are less excited about the concept.

"At this moment, I don't see a lot of value" to unified messaging, said Curt Weil, a certified financial planner at Weil Capital Management LLC in Palo Alto, Calif. ●

MOREONLINE

For resources on unified messaging, visit our Web site.
www.computerworld.com/more

Continued from page 1

Slow Road to Win 2K Benefits

as Kerberos security and Active Directory, won't be available unless the new operating system is sitting squarely on every desktop and server. So users who take the slow road to Windows 2000 will face a long haul before the cost of software, new hardware, information technology training and deployment are paid off in big benefits, analysts said.

Moreover, observers also predict that such migrations might not begin until late next year, or even 2001, as corporations wait to get past year 2000 problems and for initial glitches to shake out.

Up-Front Planning

Karan Khanna, a Windows NT product manager at Microsoft, told *Computerworld* last week that the vendor is telling big customers they will need to do more up-front planning than ever before and to take their time moving from Windows NT 4.0 to Windows 2000, which is slated to ship some time between October and year's end.

In other words, analysts said, this will be the largest and most difficult migration Microsoft customers have ever undertaken.

"Plan long and hard," said Eric Hemmendinger, an analyst at Aberdeen Group Inc. in Boston. "Don't be the first one on the block to do it. And, oh, by the way, this is not going to be fun. This is going to be like an earthquake for a lot of organizations."

That's giving some users pause. "It may be hard to justify the cost," said Pat Ryan, a software engineer at Hobart Corp., a Troy, Ohio-based manufacturer. "Usually, when we go to our managers and try to get approval for a big purchase, we have to be able to justify it financially. And if we're not going to see that justification for a while . . . we'd probably have to put it off until it's absolutely necessary."

Windows 2000, which has been on Microsoft's drawing board for about five years, has about 35 million to 45 million lines of code, compared with about 15 million in its predecessor, Windows NT 4.0. The new operating system is architecturally quite different from NT 4.0 and offers a new directory, new security and various tools, such as Microsoft Message Queue and Microsoft Transaction Server, that had been separate tools.

Khanna said Microsoft is telling users to migrate in stages, starting by putting Windows 2000 Workstation on desktops. He countered critics by saying users will see "incremental benefits," like local encryption capabilities and power management, from the move.

"In terms of risk to the operation, the desktop move only affects that desktop machine. But if anything happens, the network is still fine," Khanna said. "You go to a few servers next. See how they function, and do a few more. . . . Changing the domain controller, which is where the user name and password authentication is kept, is last because it affects a lot more people and the whole network. You want to be a lot more comfortable here."

Khanna said a lot of the Windows 2000 benefits won't take effect until the domain controller is in place. That's because the new directory and the new security can't do their jobs unless they can reach out to every Windows-based server and desktop. Old versions simply won't function with the new architecture.

CONCORDE SOLUTIONS' ISAAC APPLBAUM: Expects a difficult migration to Windows 2000

Isaac Applbaum, CEO of Concorde Solutions, the development subsidiary of Bank of America in Concord, Calif., said he expects the move to Windows 2000 to be a much more difficult migration than his team is used to.

"We're planning on it being difficult," he said, adding that he's going to wait for a few service packs to hit the streets and then do the migration — desktops and servers — in one fell swoop. "I'm a patient guy, but I want to be able to touch and see some of the benefits relatively soon. I'm not going to see benefits out of the gate doing it in stages." ●

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BRIEFS

Spam Bill Would Let Providers Sue

A bill that proposes to cut unsolicited commercial e-mail was introduced last week by Congressman Gary Miller (R-Calif.). The "Can Spam Act" is based on a California law approved last year, also introduced by Miller, allowing Internet service providers to sue senders of spam. Providers would be allowed to claim up to $50 per message and up to $25,000 per day.

Porsche's Suit on Names Tossed

A federal court last week threw out Porsche Cars North America Inc.'s lawsuit against the holder of the porsche.net and porsche.org Internet domains. The U.S. District Court for the Eastern District of Virginia ruled that the sports car maker can sue only the people or groups that register domain names, not the domain name holders themselves.

Lotus Plans cc:Mail Migration Program

At PC Expo later this month, Lotus Development Corp. will roll out a program to move users off cc:Mail and competing products and onto Notes/Domino. The program, Sopar.move, is an update of the current SmartMove program. Lotus isn't commenting on the program before its June 22 launch.

Short Takes

INTEL CORP. today will announce two 400-MHz processors for laptop computers in the Pentium II and Celeron lines. . . . MICROSOFT CORP. last week released Windows 98 Second Edition. . . . VERISIGN INC. in Mountain View, Calif., is adding digital certificates right into Microsoft Exchange with a new add-on called Go Secure. . . . NOVELL INC. last week released Version 2.01 of Novell Directory Services for NT, designed to make it easier for a user to have a single identity across mixed platforms. . . . TIVOLI SYSTEMS INC. last week announced software for managing systems and software distributed across the enterprise from IBM OS/390 systems.

Judge Questions Browser's Security in Antitrust Case

Asks government witness if bundling Internet Explorer raises security issues

BY PATRICK THIBODEAU
WASHINGTON

MICROSOFT Corp. antitrust trial Judge Thomas Penfield Jackson acknowledges that he approaches computers like any other consumer. But last week in court, he asked a question that hit on a key concern for corporate IT departments and that also raised troubling questions for Microsoft's defense.

The question was simple, but its implications for the trial are profound. "Are there any security issues involved in this choice of a browser or whether to get a browser at all?" Jackson asked computer expert and government witness Edward Felten, a professor at Princeton University.

Some companies, Felteo responded, don't want browsers on their desktops in order to reduce the risk of security problems, such as viruses.

Jackson's question is important because it focuses on the issue of consumer harm. The government argues that Microsoft's decision to make its browser an inseparable part of Windows 98 has hurt consumers — including corporate users — by limiting choice.

Jackson is months away from issuing a verdict. But if there's meaning to be found in his comments and expressions, then the government has had the edge during the trial's rebuttal phase.

The judge was particularly animated during Microsoft's cross-examination of a key government witness last week, executive Garry Norris.

Norris, who was IBM's lead negotiator for its Windows licensing agreement from 1995 to 1997, said IBM had been paying $9 per copy for Windows 3.1, but the starting price for Windows 95 was $75.

Save by Compliance

IBM was offered the chance to reduce the price by complying with a laundry list of Microsoft marketing provisions. For instance, if IBM agreed to "adopt Windows 95 as the standard operating system for IBM," it could cut its royalty rate by $3. That would mean sending IBM's OS/2 operating system to the "grave," Norris testified.

IBM rejected that provision, but by complying with others, the company was able to reduce its royalty to $46.40 — an amount still above that paid by competitors like Compaq Computer Corp.

Microsoft attorney Rick Pepperman countered by getting Norris to concede that Microsoft's agreement never required IBM to stop shipping OS/2. Microsoft also introduced documents that pointed to a far more complex relationship, including charges that IBM conducted a "smear campaign," knocking the features and capabilities of Windows 95.

But when Pepperman said Microsoft was willing to call more witnesses, including Microsoft's head of OEM relations, Joachim Kempin, to back up some of its documents, Jackson snapped: "There is a lot more they're going to have to testify besides who wrote these documents."

Continued from page 1

Bank Sued

mation, which raises serious privacy concerns. It also gives a boost to pending legislation, security and privacy experts said.

Separately, the state of California disclosed plans to sell salary information on 14 million residents to banks and loan companies as a way to raise extra money.

Capitol Hill Takes Note

"This whole [financial privacy] issue is causing a firestorm on Capitol Hill," said Rob Douglas, CEO of American Data Protection Services Inc. in Alexandria, Va.

At a hearing last week, the U.S. Senate Banking Committee debated the proposed Financial Information Privacy Act, which would mandate that banks and other financial companies better protect customer information.

More than 50 bills related to how and whether companies and government agencies can buy, sell or trade private data are pending in Congress (see chart).

In the U.S. Bank case, Minnesota Attorney General Mike Hatch accused the bank of violating the Fair Credit Reporting Act by revealing confidential customer data to direct-marketing company MemberWorks Inc. in Stamford, Conn.

MemberWorks would then call bank customers to pitch products such as vacations, dental insurance and shopping clubs. In turn, U.S. Bank would take a commission of 15% to 22% on each sale, a bank spokesman said.

'Cooperative Marketing'

The Minneapolis-based bank, a subsidiary of U.S. Bancorp, suspended business with MemberWorks the day after the suit was filed. But the bank plans to fight the charges. "We do not sell information; we have cooperative marketing programs with several organizations," the spokesman said. "It's not like a sale, where all the information is parted with and the other entity can do whatever they want with it. We closely manage this."

For example, U.S. Bank writes the scripts, monitors the selection of customers to call and lets customers take their names off solicitation lists, he said. It has similar deals with 14 other marketing companies and has been sharing customer data for about 15 years, he said.

MemberWorks didn't return calls for comment last week.

Other banks apparently have similar arrangements with marketers, said John D. Hawke Jr., U.S. Comptroller of the Currency, in a speech in San Francisco last week.

Hawke, who oversees federal banks, said he had received detailed allegations from four state attorneys general, but he declined to reveal specifics.

That worries privacy advocates. "The issue is not only [data] availability, but the capability to take information from all these diverse sources and profile an individual's lifestyle, habits, likes and dislikes," said Evan Hendricks, editor of "Privacy Times," a newsletter in Washington. "This gets to be pretty scary stuff."

A Sampling of Financial Privacy Bills

BILL	WHAT IT WOULD DO	STATUS
Electronic Rights for the 21st Century Act	Strengthens rules about when law enforcers can decrypt electronic communications	In Senate Judiciary Committee
Depository Institution Customers Financial Privacy Enforcement Act	Requires financial companies to better protect customer data	In a Senate subcommittee
Financial Information Privacy Act	Makes it illegal to obtain financial data under false pretenses	In a House committee
Securities Investors Privacy Enhancement Act	Requires brokers and investment companies to better protect customer information	In a House subcommittee

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News Release

SAP FUSION

In a move that stunned the worldwide SAP user community, Forté Software, Inc., (NASDAQ: FRTE) announced today its fusion with all SAP AG (NYSE: SAP) applications. The new entity, Forté Fusion,™ unlocks all existing SAP applications and allows them to become XML compliant within days. This means SAP applications can now be seamlessly integrated with other turnkey, custom and even legacy systems. If you are an SAP customer with immediate integration, development or deployment requirements for which Forté Fusion could be a solution, we invite you to visit our Web site or call Mike Denk at 800-90-FORTE (800-903-6783) to schedule a demonstration using *your* SAP system.

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Corporate Standards Are Key to Delta Plan

All applications at all airports now run on same hardware, OS

BY JULIA KING AND BOB WALLACE

DELTA AIRLINES INC. expects to bolster customer service significantly, while cutting costs by $30 million per year, thanks to a standard technology infrastructure at all locations.

But getting there hasn't been easy.

"Standardization forced us to purchase certain product lines and, at first, many of our vendors couldn't keep up with [our] demand," said Keith Halbert, a vice president at Delta Technology Inc., the airline's information technology subsidiary.

At other times, the airline has faced an embarrassmeot of new technology riches. Last year, for example, Delta's PC vendor, Hewlett-Packard Co., came out with a new versioo of its desktop hardware in the middle of a deployment.

"We got around this one by locking down 12,000 PCs for the year. Later, we'll come back and refresh that technology," Halbert said. Even now, Delta must continue to evaluate emerging technologies that might further boost its services.

But the basic technologies have been selected. Early decisions included standardizing on IBM's OS/390, HP-UX Unix and Microsoft Corp. Windows NT operating systems and Oracle Corp. databases.

Uniform Operations

"Every single applicatino in every single airport runs on the same hardware, operating system, database, middleware and office suite," Halbert noted.

Delta also migrated from eight e-mail packages to Microsoft's Exchange and from homegrown middleware to IBM's MQSeries, said Paul Millard, vice president of engineering at Delta Technology. During the next year, Millard said, Delta will replace its old LAN infrastructure at 26 major airports. Token Ring LANs will be replaced with 10M/100M bit/sec. Ethernet connections out to the edge of the network; OS/2 machines will be supplanted with NT boxes.

On the wide-area network side, Delta built a 622M bit/sec. Asynchronous Transfer Mode (ATM) backbone network that link 15,000 employees at its Atlanta campus. The airline will deploy miniversions of the ATM networks at 26 U.S. airports by year's end, with plans to broaden the project to ioternational airports next year.

Qwest Communications International Inc. and MCI WorldCom Inc. are each providing ATM lines for redundancy. Also oo the flight plan is the upgrade of its reservation center networks, which are currently linked using multiple T1 private lines, Millard said.

Delta is also evaluating enterprise resource planning packages to support finance, procurement and human resources applications, with plans to pilot the winning package by late summer.

To enhance service for consumers looking to book flight reservations, Delta Technology plans to use new switch software that will enable call center agents who have been taking toll-free calls to also book flights based on incoming e-mail and faxes.

That technology will likely be implemented at Delta's eight domestic call centers as well as three in South America and others in the U.K., Tokyo and Bombay. "We want total messaging integration," Millard said.

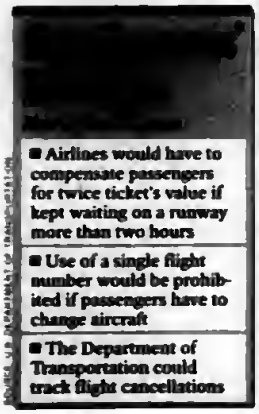
Delta has standardized on wireless LANs from Lucent Technologies Inc. for use on its campus and in airports.

Continued from page 1

Delta

tion processes," said Michael Zea, an aviation analyst at Mercer Management Consulting Inc. in Washington.

At the core of the Delta project is a huge data warehouse built around an Oracle database that — via a series of custom-built, customer-centric applications — pushes real-time, integrated flight and passenger information to airline workers. Using that information, workers can serve passengers faster and with a far more personal touch (see story above).



- Airlines would have to compensate passengers for twice ticket's value if kept waiting on a runway more than two hours
- Use of a single flight number would be prohibited if passengers have to change aircraft
- The Department of Transportation could track flight cancellations

SOURCE: U.S. DEPARTMENT OF TRANSPORTATION

What makes the project so unusual is the extremely tight time frames for completion and the universal access the project provides to mountains of useful passenger and flight data buried deep in multiple mainframe-based systems.

Most airlines have huge databases of customer information that could be used to improve service, but aren't, said Malcolm Persen, a customer management analyst at Arthur D. Little Inc. in Cambridge, Mass. For example, Persen said he can use Uoited Air Lines Inc.'s Web site to "look at every flight I've taken for the last three years. But they haven't figured out how to utilize that database."

Now, agents using Delta's new gate and boarding application can glance at a single screen on a Windows NT workstation and see which passengers have checked in for a flight. They can also see whether any passengers will miss the flight because of delayed connections. Knowing that, agents can then confirm standby passengers faster and automatically book delayed passengers on later flights.

Before, agents had to pull data from mainframe-based systems by typing long, cryptic, character-based commands. Asking an agent to check for an aisle seat on a connecting flight could hold up the check-in line for several minutes.

DELTA CIO CHARLIE FELD: Putting real-time customer data in the field

With the new system, "We don't have to spend as much time with our heads down," said Crystal Kelley, a gate agent in Atlanta. "The system tells us who's going to be here and who isn't, which makes it much easier to clear standbys and eases congestion in the jetways."

"The new gate system is the first real, visible sign of change" onder the new infrastructure, Halbert said.

Over the next few months, similar applications will be rolled out for baggage handlers, ramp workers and agents in Delta's airport club rooms. By year's end, passengers will have access to some of that real-time data via Delta's Skylinks Web site, which will tie into the central data warehouse.

Within the next three months, Delta plans to install kiosks and deploy other mobile technologies — such as handheld wireless computers — at a handful of airports. The units will issue bar-coded boarding passes to passengers who swipe through a Delta frequent-flier card and type in the answers to the two security-related questions agents now ask at the gate. Possible locations for mobile units include near car rental check-in centers and in airport parking lots.

"Delta really seems to be getting the concept of what they need to do to manage their customers," said Todd Burger, a transportation analyst at Arthur D. Little.

Delta already issues boarding passes to passengers who check io at the curb. "We'd like to get to the point where, when you go to the gate, your only purpose is to get oo the plane," Halbert said.

MOREONLINE

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Electronic Trading Language To Help Integrate Services

BY THOMAS HOFFMAN

In a development that could boost business-to-business e-commerce in the financial services industry, J. P. Morgan & Co. and Pricewaterhouse-Coopers have jointly created a new computer language for electronic trading.

FpML, or Financial-products Markup Language, is aimed at integrating Internet-based services ranging from electronic trading and confirmations to sharing information about financial derivatives. It is based on Extensible Markup Language (XML).

The specification, which the companies will license for free, "is exactly the way XML schemas need to emerge," with major players in a vertical market posting them for no charge, according to a report oo the topic by Zona Research Inc. in Redwood City, Calif. Zona said it expects "real" applications to emerge from the standard some time next year.

A series of workshops on the new language will kick off next month.

For more information on the workshops or the new language, visit *www.fpml.org*.

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Retail IT Grapples With Labor Woes, Globalization

Industry that has been slow to spend on IT now faces a host of hurdles, yet takes business reins, say panelists at conference

BY DAVID ORENSTEIN
CHICAGO

Retailers that have traditionally discounted IT spending now find themselves facing a double threat: the Internet and an IT labor shortage. The largest must also contend with integrating global IT cultures as they expand.

Retail information technology leaders converged here at the Retail Systems 1999 conference last week and talked about what they are doing to deal with the challenges. Excerpts follow:

RETAIL SYSTEMS PANEL chews over IT challenges: (from left) Dan Bernard, B&Q; Brian Light, Staples; John Hnanicek, eToys; Jake Mendelsohn, PetsMart; Ian O'Reilly; Deborah Gillotti, Starbucks

On increasing the influence of IT:

Brian Light, CIO, Staples Inc., Framingham, Mass.: We talk to the business [units] — "What are your objectives for the next year and the next three years?" [We] try to figure out what is it we can do to help the business deliver those things. So rather than thinking in a reactive mode . . . we're communicating. "Here's how technology can help you achieve your objectives. How do we change the structure of the business based on what technology can do for us?" There's not a better example than the Internet.

Jake Mendelsohn, CIO, PetsMart Inc., Phoenix: The IT group and the CIO in particular are in a unique position within the business in that we can work across the functions and get over the political ramifications within a business where you have pride of ownership. The CIO can use systems to drive new business processes and break down those traditional barriers within the company.

On the IT labor shortage:

Deborah Gillotti, CIO, Starbucks Coffee Co., Seattle: What we've seen in our organization is a tremendous shift to trying to find the right kind of talent that can support a very rapidly changing environment and also changing our management policy toward being able to recruit and retain people. We've had to go recruiting nationally. And even so, we still face paying retention bonuses and signing bonuses. [Labor competition] surprisingly is not only occurring in the technical skills area, but also in the functional skills area as it becomes increasingly more difficult to find people with project management skills and who understand the processes.

John Hnanicek, CIO, eToys.com, Santa Monica, Calif.: We are very equity-incentivized. A year or two from now, when we're not a start-up anymore, we're going to be the target of a lot of land-based retailers and other companies in general. We're looking at a lot of non-cash programs and incentives. I think Generation Xers and Ys . . . want to feel like they have an impact. We are experimenting with extremely flattened organizational structures.

On integrating units around the globe:

Dan Bernard, systems director, B&Q PLC, Eastleigh Hants, England: We're putting in place a communications infrastructure. We need interoperability standards. We need data consolidation systems [regarding] what we are buying . . . so that we can pull together our buying power. [We need] to try to get scale by not operating as 20 different businesses. The trick is to do that without draining the local responsiveness.

Light: We're going to come up with centers of excellence focusing on supply-chain or marketing or financial systems that support the entire world. We might do some of this in Framingham. We still have the IS organizations in these different countries that are supporting the business. [But] rather than developing systems three or four or five times, we'll just do it once. ▶

Retailers Eye Supply-Chain Collaboration

Although it hasn't moved beyond testing stage, many see big benefits

BY DAVID ORENSTEIN
CHICAGO

Supply-chain collaboration hasn't moved past the stage of scattered pilot projects, but a few retailers are beginning to cite benefits such as jacked-up sales and cost savings from reduced inventory and accelerated product-to-market times.

Leading users at the Retail Systems 1999 conference and its twin, the Voluntary Interindustry Commerce Standards Association (VICS) conference, said they are already seeing benefits from collaborative activities, while others said they plan to follow suit beginning next year.

In supply-chain collaboration, retailers and suppliers share information such as sales forecasts and product designs and work together to develop the information. It's been in the works at companies such as Wegmans Food Markets Inc. and Nabisco Inc. [CW, Oct. 19].

Adoption of supply-chain collaboration will climb incrementally as retailers tackle the considerable gruntwork of preparing their business processes, employees and systems to accommodate collaboration, said Larry Lapide, an analyst at AMR Research Inc. in Boston. "It's going to happen, but we're not talking about quantum leaps," he said.

David Simister, manager of collaborative systems at Sainsbury Supermarkets Ltd. in London, said the incremental approach is like eating an elephant — you don't try it all at once — or boiling a frog — you should slowly turn up heat on employees to minimize pain.

At Sainsbury, a collaborative promotion program with suppliers brought hundreds of thousands of dollars in extra sales, slashed the hours devoted to paperwork and yielded 20% greater availability of merchandise, Simister said.

Phoenix-based PetsMart Inc. also preached the benefits of a collaborative supply-chain pilot. CIO Jake Mendelsohn and Marcia Meyer, international supply division president, said the company reduced inventory by 20% and the time-to-market of products by 50% by collaborating with overseas suppliers via an extranet rather than by ad hoc phone and fax methods.

Representatives of Wal-Mart Stores Inc., one of the earliest pioneers of the collaborative supply chain, told a packed room that it has seen favorable results from its ongoing pilot projects, which started three years ago. Year 2000 work is constraining the company from expanding the program, said Steven Robinson, supply-chain management vice president, but it will likely gather steam next year.

Brian Light, CIO at Staples Inc. in Framingham, Mass., said supply-chain collaboration will be a top priority when he lays out the company's three- to five-year strategic plans in coming months. But like many retailers, Light said he wants the company's internal systems to be integrated, scalable and secure enough first.

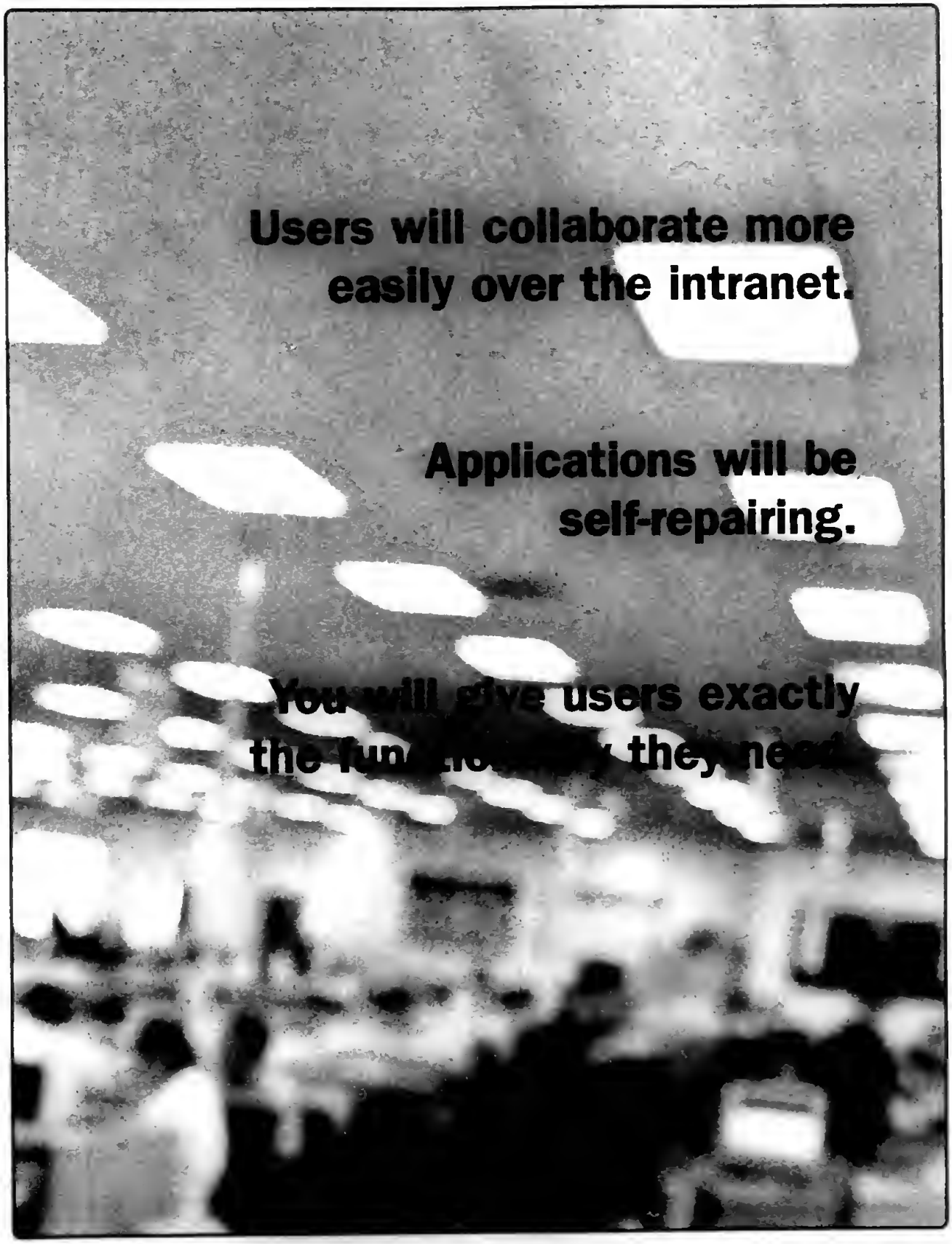
Meanwhile, suppliers at the conference said they want to make sure that retailers adopt VICS's recently proposed standards to ensure they don't have to set up different systems to interface with each retailer. ▶

CONDUCT PILOTS with key suppliers. The technology can be simple — spreadsheets, e-mail and flat files.

BUILD A SHARING RELATIONSHIP with suppliers; separate pricing from other data if it's too sensitive.

DEVELOP COLLABORATION within the company to prepare them for external collaboration.

TREAT NEW VENDOR PRODUCTS AS BETA SOFTWARE, even if it isn't. The field is so new that the products will change.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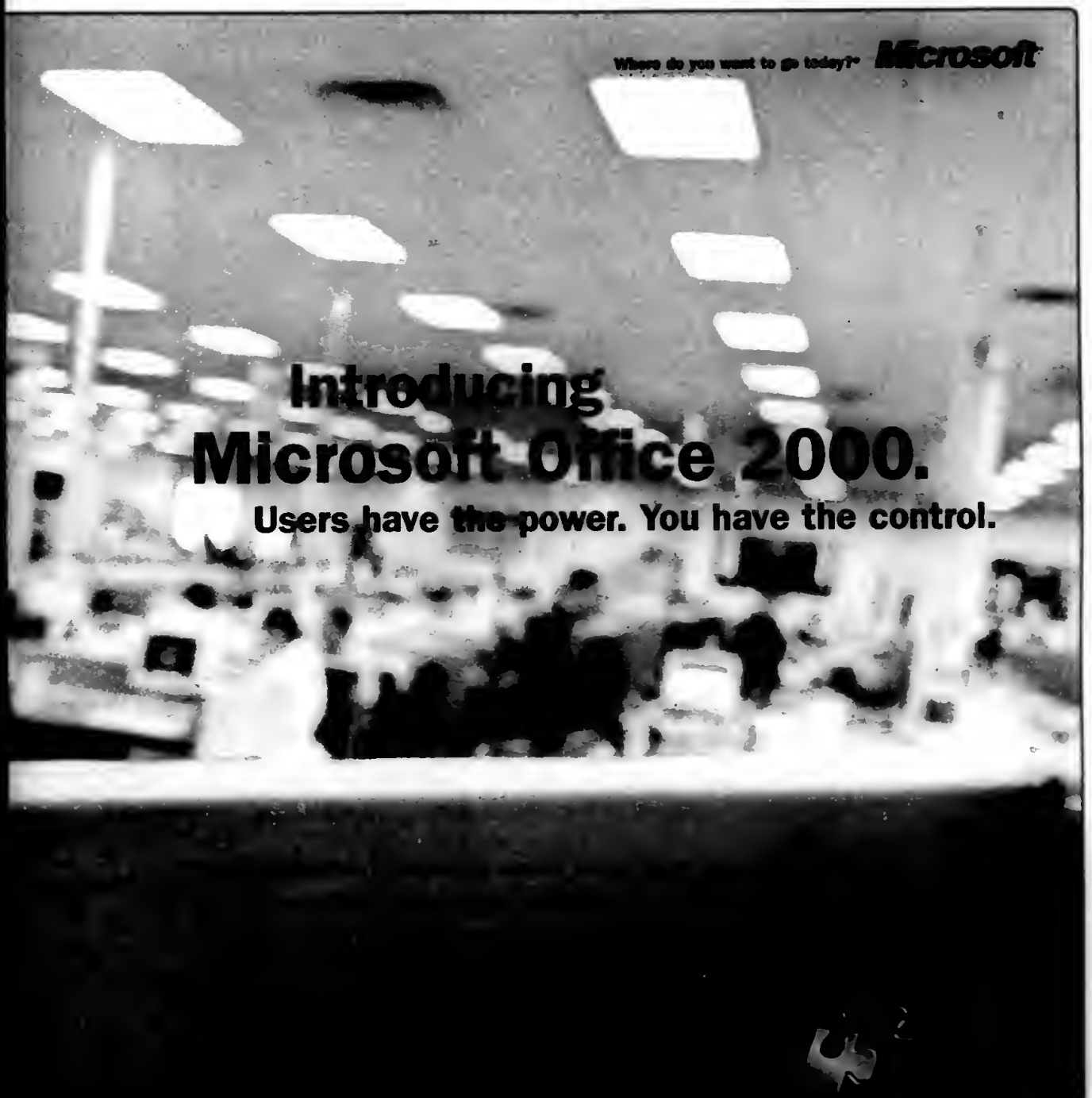

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Awards Night Fetes High-Tech Innovators

Winning projects include efforts to speed 911 calls and wire classrooms worldwide

BY STEWART DECK
WASHINGTON

THE HUGE Corinthian columns in the Smithsonian Institute's Building Museum failed to dominate the huge room at last week's *Computerworld* Smithsonian Awards gala.

The four-story marble pillars faded into the background while bigwigs happily stood on chairs constructing free-form tabletop towers and proud executives beamed as luminaries of the IT industry gathered for the 11th year to acknowledge and cheer loudly for "applications of outstanding use of information technology."

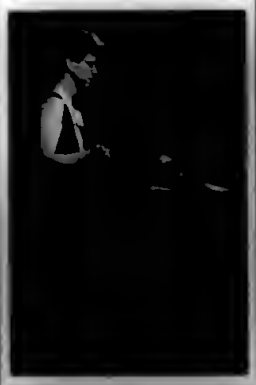
Winners covered a range of applications, from MaMaMedia Inc.'s trophy in the education category for an Internet site and products for kids to CTI Inc.'s award in the science category for developments in positron emission tomography, which allows doctors to view cancers noninvasively.

Several award recipients said they felt humbled by the recognition. "All I did was put a Web page up and challenge people to sign up," said John Gage, a chief scientist at Sun Microsystems Inc., who was presented a Technology Leadership Award for Education. Not exactly. Gage's efforts gave birth to the Net Day project, which wires school classrooms and libraries. It has spread to 50,000 schools and libraries in 40 countries worldwide.

The scope of some projects even awed the audience, many of whom are well-versed in complex applications. Cheers rang out for Lucent Technologies Inc.'s receipt of an award for its development of the 911 database management system that speedily delivers emergency calls. And when The Human Genome Project — described by some as the most important scientific endeavor of our time — received a 21st Century Pioneer Award, it got a standing ovation for its ongoing work in mapping the full set of human chromosomes.

But the youngest member of the audience wasn't so wowed when Andreas Bechtolsheim and Bill Joy, the co-founders of Sun, received Leadership Awards for Innovation. "Daddy!" called out Joy's 3-year-old daughter, Madison. Joy squinted through the stage lights, grinned and waved.

For a full list of winners and finalists, visit our Web site at *www.computerworld.com.*



THE BIG NIGHT: Clockwise from upper right: 1) Awards await recipients in the Smithsonian Building Museum; 2) CEO Nancy Hayes of the Starbright Foundation, winner for Media, Arts and Entertainment; 3) Denise Wood, program manager at Federal Express Corp., award winner for Business & Related Services (FedEx's second *Computerworld* Smithsonian Award); 4) IT Technology Leadership award winners John Gage, Bill Joy (waving), Andreas Bechtolsheim, John Chambers and Irwin Jacobs; 5) 21st Century Pioneer award recipient Jeff Bezos, CEO Amazon.com; 6) Mary Glackin, program manager at the National Weather Service, winner for Environment, Energy & Agriculture

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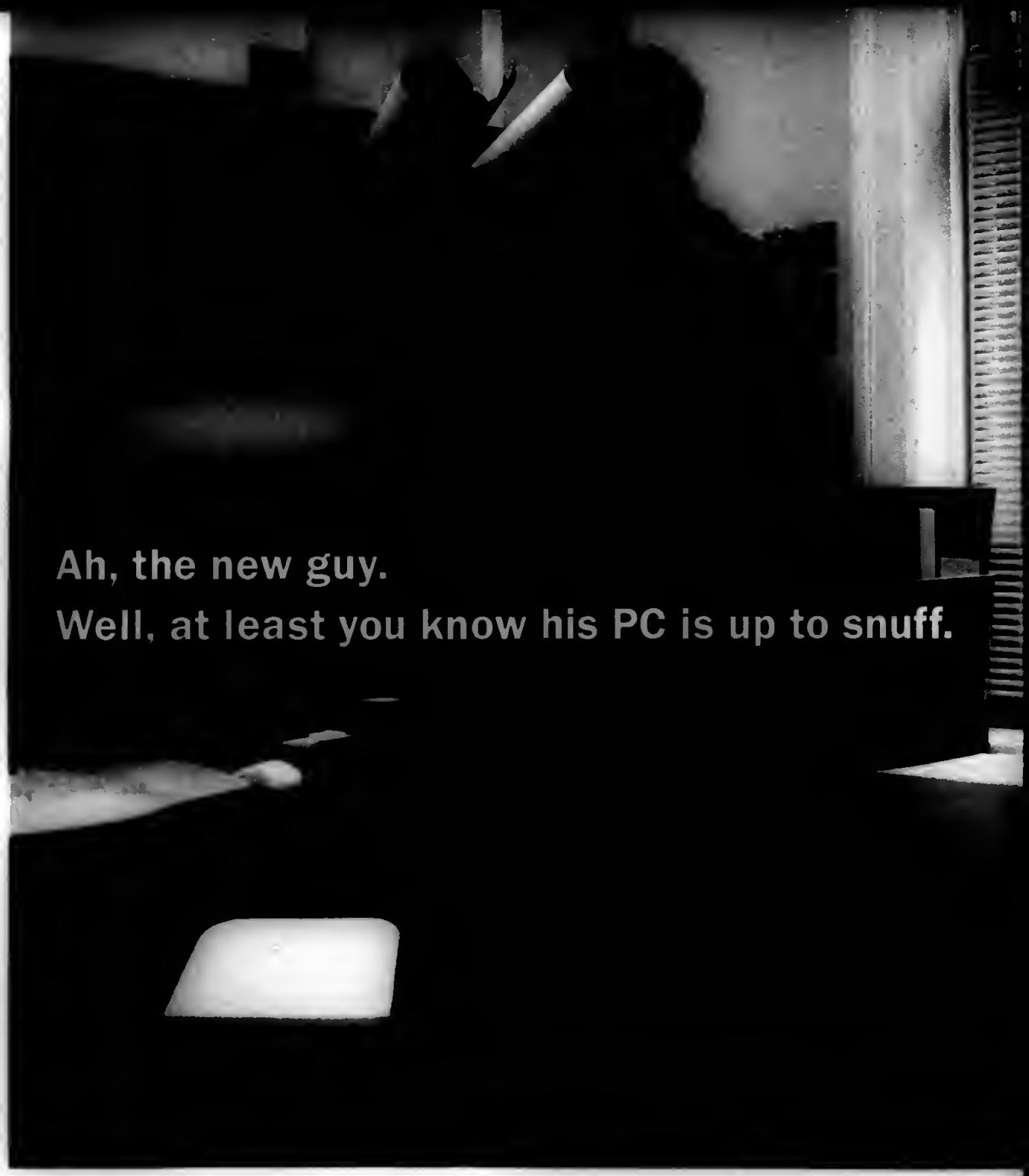

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Corporate data at risk from telecommuters

BY ANN HARRISON

A FRENCH Internet worm called PrettyPark, which infected thousands of Microsoft Windows users last week, can download company data used by telecommuters on home PCs to a thieving Internet Relay Chat (IRC) channel.

And that puts corporations at risk because telecommuters often fail to regularly update their antivirus software, said Sal Viveros, group marketing manager for total virus defense at Network Associates Inc. (NAI) in Santa Clara, Calif.

"As more and more people telecommute, that is the hardest group to keep updated and control [via] security policies [given that] remote users don't necessarily log in every day," Viveros said. NAI's Enterprise SecureCast technology *(www.nai.com)* pushes updates of the company's antivirus software such as VirusScan and CyberCop to users' desktops when they log on to company networks.

"If you have a valuable asset on your laptop or home machine, you should be worried about this attack," said Fred Rica, a partner at Deloitte & Touche's attack and penetration service line.

Information technology managers should be concerned. Viveros said there's a growing number of remote access Trojan programs sent via e-mail that can open the backdoor to a user's PC and gather log-ins and passwords to company intranets. "It is much easier to get a remote access Trojan into a company than break down a firewall," Viveros said.

Trojan Terror

PrettyPark, for example, enters a user's system as a Trojan horse when Windows users open an attached e-mail file named PrettyPark. Unknown to users, the worm connects their PC to a custom IRC channel when they are logged on to a remote server while surfing the Web or reading e-mail.

Once connected to an IRC, the creator of the custom channel or his robot program can download the victim's files, passwords, log-in data, operating system preferences and other personal information — including stored credit-card numbers.

PrettyPark also sends duplicate files of itself to the e-mail addresses listed in the user's Internet address book. Antivirus software firms say they're trying to determine who's collecting this information.

The worm has mostly attacked home users who are less likely to update antivirus software or use firewalls that block IRC traffic, according to Carey Nachenburg, chief researcher at Symantec Corp.'s antivirus research center in Cupertino, Calif.

Although computer viruses are intended to infect files or disks on a single PC, worms are specially crafted to spread among computers in a network. By last week, at least 2,000 users had been logged on to the rogue IRC channel, Nachenburg said.

"Even if they updated their antivirus software a week or two ago, [PrettyPark] may still be able to infiltrate their systems because the definitions were just posted [June 10]," said Nachenburg, whose company *(www.symantec.com)* distributes Norton AntiVirus software, which also blocks the worm. ◗

Microsoft Formally Launches Office 2000

BY JACK MCCARTHY
SAN FRANCISCO

Microsoft Corp. last week released its Office 2000 desktop application suite, designed to accommodate the growing market of Internet users.

"All of Office 2000 tools have been evolved to embrace the Internet and to enhance not only personal productivity, but group productivity," Microsoft President Steve Ballmer said at the launch of Office 2000 here.

Microsoft shipped Office 2000 to large companies in May. The product was set to be sent to stores for wide distribution by last Thursday, Ballmer said. The suite includes Word, Excel spreadsheet software, Outlook e-mail and personal information manager, the Access database program, PowerPoint presentation software and the Publisher desktop publishing application.

Premier, the suite's top-line version, costs $799 for the full version, $399 for the upgrade. Professional edition costs $599 for new users, $309 for the upgrade. Standard, the low-end version, costs $499 for new users, $209 for the upgrade.

Several vendors announced products that they said were designed to extend Office 2000's collaboration features. Latitude Communications Inc. in Santa Clara, Calif., announced a $19,995 add-on to its MeetingPlace collaboration server, which will let users schedule and participate in voice or data conferences from within Office 2000 applications such as Word and Excel. And the next version of Cambridge, Mass.-based Instinctive Technology Inc.'s eRoom project collaboration server will support direct saving and editing of Office 2000 documents into eRoom "folders." ◗

McCarthy writes for the IDG News Service in San Francisco. Senior writer Dominique Deckmyn contributed to this story.

Sun Eases Cross-System Management via Solaris

Developer kit allows use of standards

BY JAIKUMAR VIJAYAN

Sun Microsystems Inc. is making it easier for users of its Solaris operating system to manage servers and software from other vendors and on different operating systems.

The company last week announced Solaris Webem software development kit — Sun's implementation of the emerging Web-based Enterprise Management standards being developed by the Distributed Management Task Force in Portland, Ore., an industry organization that's leading the adoption and unification for desktop, enterprise and Internet environments.

Webem standards let vendors present hardware, operating system and application management information — such as version numbers or microprocessor type — in a standard and consistent format using technologies like Extensible Markup Language and Common Information Model.

Sun's Solaris Developers Kit will give software vendors a way to present management information relating to their applications in a standard and accessible format on Solaris.

Webem is a way to ease management hassles by providing information that looks the same on different vendors' hardware and operating systems, said Philip Mendoza, an analyst at International Data Corp. in Framingham, Mass.

Sun's implementation of the Webem specifications in current and future versions of Solaris "puts them very much in line with what other vendors are doing in this area," Mendoza said. "Device vendors and system vendors have endorsed Webem."

Microsoft Corp. also supports the standard on the operating-system side, as do hardware makers Compaq Computer Corp., Dell Computer Corp. and IBM. ◗

Software Piracy Tops $1 Billion

BY ANN HARRISON

A report issued last week by the Software Publisher's Association (SPA) announced that $1 billion worth of pirated software was circulating in 10 major U.S. metropolitan areas last year. Topping the list was the New York metropolitan area with an estimated $259 million in pirated software.

Other cities in the top five were Los Angeles, Chicago, Washington, Boston and San Francisco.

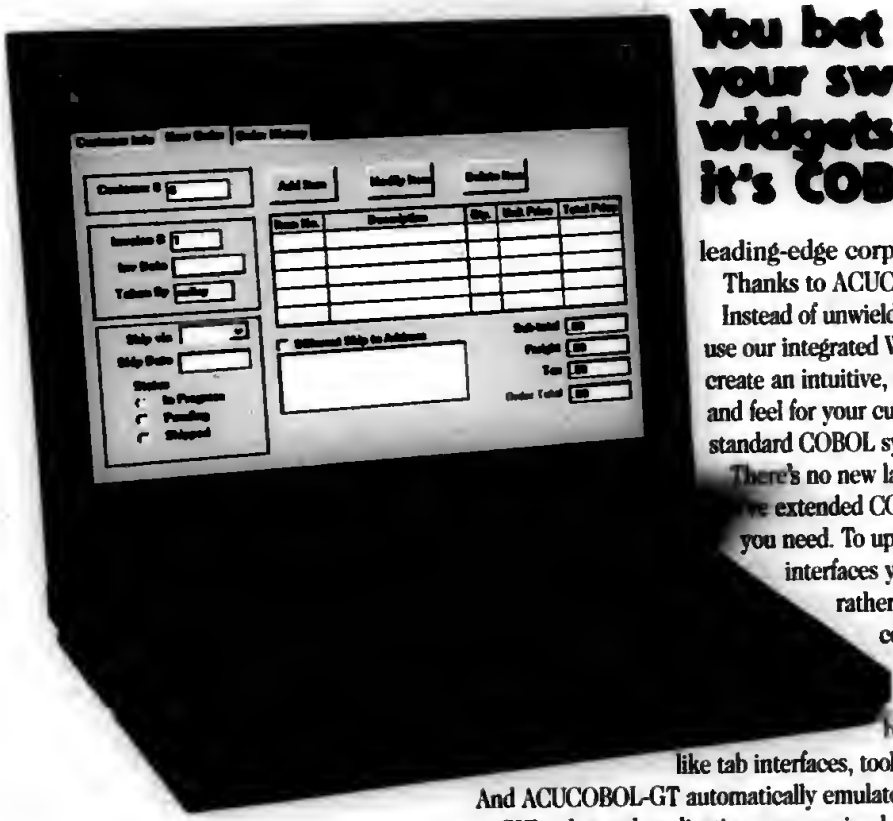
During the past two weeks, the FBI and southern California police arrested eight people suspected of making and distributing $56 million in fake Microsoft Corp. software. The arrests are part of an investigation begun last fall of what police say is a large, organized, software-piracy ring based in Paramount, Calif., south of Los Angeles [CW, May 3]. The suspects were charged with copyright violations, money laundering and other crimes.

The SPA is the antipiracy division of the Software Information Industry Association (SIIA), which represents 1,400 software developers. Based on the number of desktops and workstations sold in the U.S., SIIA President Ken Wasch estimates that one in every four business applications in use in the U.S. is an illegal copy.

Lucas Graves, an analyst at Jupiter Communications Inc. in New York, cautions that the SPA has an interest in promoting high loss estimates. "Getting a true figure is difficult because it's impossible to know if the pirated software would have ever been purchased," Graves said.

A pending House bill called the Copyright Damage Improvement Act of 1999 would streamline damage awards for infringement of all copyrighted material, including software programs. The bill would let copyright holders receive statutory damages for total infringement rather than awards based on each proven instance of copyright violation. ◗

This is COBOL?



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Oracle Acquires Data Mining Capabilities

Buys Thinking Machines — with eye online?

BY STEWART DECK

Oracle Corp. added a tool to its data warehouse offerings last week when it acquired the data mining assets of Burlington, Mass.-based Thinking Machines Corp. for an undisclosed sum.

Oracle chose Thinking Machines because "we feel they offered the most scalable and robust data mining tools on the market," said Michael Howard, a vice president in Oracle's data warehousing division. "The more data [comes] from the Net and from [enterprise resource planning] systems, the more you want to be able to tap in to that in a meaningful way."

Industry analysts estimated the deal to be worth between $5 million and $20 million.

A bulletin from Zona Research Inc., a Redwood City, Calif., consultancy, said the acquisition will also allow Oracle to position itself well with online retailers. "Now, Oracle can offer a product that will analyze greater volumes of data and provide a deeper insight in the behavior of the online shopper," the bulletin said, adding that those improvements could lead to "greater customer retention and more effective associative marketing."

Howard said Oracle wants to enhance its data warehouse products and offer the most differentiated customer-relationship management suite, particularly for electronic business.

Michael Schiff, an analyst at Current Analysis Inc. in Sterling, Va., agreed that the acquisition will enhance Oracle's overall data warehouse capabilities. He said it will make the company more competitive with NCR Corp. and IBM, which currently offer mining capabilities packaged with their databases.

Rivals Worried

The buyout may prove worrisome to a number of Thinking Machines' data mining competitors that have partnership agreements with Oracle under its Warehouse Technology Initiative.

Founded in 1983, Thinking Machines was renowned for its expertise in massively parallel supercomputing. Its developments in data mining software sprang from that expertise. In March 1997, it hitched its fortunes entirely to data mining and sold its supercomputing technology to Gores Technology Group in Los Angeles.

Oracle said it will keep all of Thinking Machines' approximately 30 employees onboard. ◗

Court Rules Intel Has No License for Intergraph Patent

Judge: Chip maker's license defense flawed

BY STACY COLLETT

INTEL CORP. has no license to use Intergraph Corp.'s Clipper microprocessor patents, according to a summary judgment handed down last week by a Huntsville, Ala., federal district court. The ruling strikes down one of Intel's principal patent defenses in an antitrust suit brought by Intergraph.

Intel argued that it had rights to the Clipper technology — which it uses in its Pentium processors — through a long-standing, cross-licensing agreement with National Semiconductor Corp.

In 1987, Intergraph and National Semiconductor each bought parts of Fairchild Semiconductor Corp. Intergraph purchased Fairchild's advanced processor division, the original developer of the Clipper microprocessor.

Intel later claimed that Fairchild's Clipper patent applications were captured under the cross-licensing deal between Intel and National Semiconductor.

Federal District Judge Edwin Nelson disagreed, ruling that National Semiconductor had no legal authority to grant a license because the patent was owned by Fairchild, a legally distinct corporation. "Intel thus never received a license from any entity with the power to grant one," Nelson wrote.

Intel spokesman Chuck Malloy said the ruling has broad industry implications.

"If a company is entering into a license agreement, that company must obtain permission, presumably in writing, from every subsidiary in the company to apply licensing terms to their intellectual property," he said.

Intel plans to appeal the ruling. "We clearly have other defenses in this one area, which are that Intel products don't infringe on the patents, and Intel doesn't believe the patents are valid," Malloy said.

Intergraph sued Intel in November 1997 for patent infringement and coercive tactics, including withholding essential design information for Intel products. The trial's start is scheduled for Feb. 14, 2000. ◗

Evidence of Microsoft "Blacklist" Unleashed at Bristol Trial

Gates, via videotape, denies illegal tactics

BY KIM S. NASH

For three hours last week, Microsoft Corp. Chairman and CEO Bill Gates loomed large in a Connecticut courtroom as Bristol Technology Inc.'s antitrust trial continued.

As he did in the government's separate antitrust case against Microsoft, Gates appeared at the Bristol trial via videotape — this time, from a March deposition.

He denied the charge that Microsoft used its dominant position in the PC software market to try to stamp out competition.

Countering that view was Richard Langlois, an economics professor at the University of Connecticut, who testified that Microsoft does indeed hold monopoly power and that the company appeared to have tried to shut Bristol out of the market for Unix-to-Windows NT conversion tools.

'Hostile' Vendors

Internal Microsoft e-mail submitted as evidence discussed a "blacklist" of software vendors deemed "hostile" to Microsoft's product plans or "in [a] business Microsoft does not like to see flourishing." Microsoft employee Takeshi Numoto in 1997 labeled companies "friend," "neutral" or "enemy" based on whether, for example, they enthusiastically supported Windows or Unix.

Although Bristol wasn't mentioned in the e-mail, the company contends that the e-mail shows how Microsoft tried to manipulate competition in Bristol's market.

"That exhibit had nothing to do with Bristol" and was a separate discussion about Bristol's main rival, Mainsoft Corp., a Microsoft spokesman said.

The trial, in U.S. District Court in Bridgeport, Conn., is expected to last until late next month. A decision could come even before the U.S. Justice Department case against Microsoft — filed more than a year ago — is finished.

Danbury, Conn.-based Bristol sued Microsoft last August, claiming that Microsoft acted anticompetitively when it offered Bristol an NT source code license that was allegedly unfair to the smaller vendor.

Microsoft countered that Mainsoft, in Sunnyvale, Calif., had no problem signing a similar contract and that Bristol sued simply to gain a better bargaining position. ◗

Microsoft Invests in Inprise as a Win 2000 Hedge

Microsoft Corp. has bought some support for its Windows 2000 platform with a $125 million investment in onetime rival Inprise Corp.

The investment, which includes a $25 million stock purchase, means Scotts Valley, Calif.-based Inprise has agreed to support the upcoming Windows 2000 operating system and to license Microsoft Foundation Classes, Microsoft's C++ class libraries and its Software Development Kit.

Dan Kusnetzky, an analyst at International Data Corp. in Framingham, Mass., said the deal shows that "Microsoft is looking for ways for people to accept its new operating system. One way to do that is to make sure there are tools geared to that new OS."

Inprise is the renamed Borland International Inc., which once sold the rival Quattro Pro spreadsheet application. The company, which named Dale Fuller president and CEO in April after Del Yocum resigned, posted a $25.6 million loss for the first quarter, compared with a $13.4 million loss in the same 1998 quarter. The company posted an $8.3 million profit on $189.1 million in revenue for 1998. – *Sharon Gaudin*

Competitive advantage: Windows NT on Compaq

Inside information: *Windows NT Advantage*

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COMPUTERWORLD

MARYFRAN JOHNSON

Business schooling

QUICK, what's discounted cash flow? What's amortization of capital goods? And why should you care about what these business terms really mean? Credibility, that's why. However vital your technology role is in your company, an ability to communicate with the business side grows more critical by the day. Consider how year 2000 projects and e-commerce initiatives are already shining a spotlight on the tech side of your company. Then factor in all the media coverage of technology, at high tide and rising.

MARYFRAN JOHNSON is executive editor of *Computerworld*. You can contact her at maryfran_johnson@computerworld.com.

More than ever, businesspeople feel comfortable talking about technology and judging its value. But how can you learn their lingo? Our answer is *Computerworld*'s Business QuickStudy — a one-page weekly feature we just launched in our business section. In the first half-dozen installments, we'll be giving you the rundown on a variety of key financial terms, followed by a series of business strategy, management and outsourcing terms. Each is designed to be quick to read and easy to understand.

In the first Business QuickStudy last week, we tackled discounted cash flow (a way to calculate the value of a high-priced item over time). We defined the term and showed how one IT director saved his company $42,000 by understanding it.

This week (see page 65), we focus on statement of income and how to read a balance sheet. As one financial expert in the story notes, when CIOs sit down with CFOs to lobby for technology investments, they must quantify the impact of that project — or risk walking away empty-handed.

"We want IT people to build their credibility by being in touch with business terminology and strategies," explains business editor Kevin Fogarty, who had the bright idea for a new series that mirrors our popular Technology QuickStudy (see page 77). QuickStudy is also on our Web site (*www.computerworld.com*). As we ramp up this new series, QuickStudy editor Stefanie McCann (stefanie_mccann@computerworld.com) would love to hear from you about any topics we should include. Just send us a QuickNote, and we'll be off and running. ▶

WILLIAM ULRICH

Time for a little Y2K community service

FRIENDS, COLLEAGUES and the media want to know what I am doing to prepare for year 2000. I tell them that I am preparing Santa Cruz County, Calif., to meet the challenge ahead. This reply disappoints many people. Because I am part of the minority that believes in taking personal responsibility on this issue, people assume that I have a bunker stocked with weapons ready for Armageddon.

WILLIAM ULRICH is president of Tactical Strategy Group Inc. and co-founder of Trikeyns Research LLP. Contact him at bigbear@unwin.com.

Unfortunately, the Y2K community movement is losing steam and needs your support. It's driven by citizens working with local governments to help a community achieve a basic level of Y2K readiness. In other words, if your community is prepared for Y2K, it benefits the individuals in that community and goes a long way toward dissipating the panic that can strike the uninformed citizen.

Let me tell you how this has worked in Santa Cruz. A group of citizens formed a task force to inform people about Y2K and encourage them to take action. Our research team queried water districts; initiated a health care committee comprised of hospitals, long-term facilities and home-care facilities; spoke with financial institutions; called food markets; assessed communication and power continuity; and teamed up with the office of emergency services.

We posted any positive news we found on our Web site. We didn't post negative findings for legal reasons but made it clear that no news is not good news. People can now make more informed decisions on how to prepare.

Our awareness team informs citizens of global and local Y2K progress and how they can prepare for possible disruptions. The state, for example, issued warnings about drinking water. The task force passes that type of information along through a series of town hall meetings — speakers include the Red Cross, state and county officials, leading citizens and year 2000 experts.

The task force also sponsors neighborhood workshops.

The good news is that this task force model has been replicated hundreds of times nationwide. The bad news, according to one survey, is that the

community movement is losing momentum. One reason for this may be the media, which have numbed people to the reality of the problem by playing up extremist views on both sides of the issue.

In the midst of these divergent views is s Y2K community movement that needs to be revived. I am asking anyone reading this to help. If you aren't afraid of being labeled by those who shun personal responsibility for the well-being of their communities, then start s group to inform and empower your neighbors. Y2K concerns will grow in late 1999. Setting up s task force now will position communities to come together around this challenge when they need help most.

DAVID MOSCHELLA

A new chapter for Merrill Lynch and Borders Books

WE CAN PROBABLY all agree that one of the trillion-dollar questions of the "new economy" is, What role, if any, will be reserved for traditional branch and retail operations? As the clash of the cyber and physical worlds begins, millions of jobs and the future of some of our strongest companies are at stake.

Recently, four stories — two about money and two sbout books — have given us a glimpse of what the next turn of the wheel might look like. Merrill Lynch has announced that come Dec. 1, it too will be s low-priced, online trader, while upstart rival ETrade plans to use $1.8 billion of its high-priced stock to merge with the Internet banking company Telebanc Financial Corp.

DAVID MOSCHELLA is an author, independent consultant and weekly columnist for *Computerworld*. Contact him at [illegible]

On the book front, Borders has signed s deal with Sprout Inc. to use that company's technology to print books on demand inside Borders' existing stores. Meanwhile in Japan, Softbank, 7-Eleven and the publisher Tohan are setting up s new venture that will enable books to be ordered, picked up and paid for st local 7-Eleven stores.

What can we learn from this workaday Web news? The main driver of both the Merrill and ETrade stories is that the cost of processing stock-trading transactions will continue to fall steadily and, therefore, won't be the long-term basis for a large and profitsble business. All around the U.S., states are suing banks for charging consumers $1 for ATM transactions. Why should the cost of trading stocks be all that different?

For Merrill and other traditional Wall Street hrokerages, this means their traditional husiness model is being turned opside down. Giving sway free research and advice in exchange for overpriced transactions doesn't work anymore. Eventually, tbe transactions will be virtually free, snd tbe companies will live or die based on the value of their research, advice and management. No wonder brokerage stock prices are falling.

ETrade faces the flip side of this dilemma. It has built up a huge discount trading customer base, but to secure its future it has to significantly expand its range of services — hence, ETrade's investments in online banking. However, without local ATM and teller resources, and with no source of immediate consumer savings, the spveal of purely online banking is nowhere near that of online stock trading.

The two book deals demonstrate innovative ways to leverage local resources. It's easy to scoff at the idea of putting high-tech printing systems into your typical bookstore. But what if Kinko's decides to print books on demand? It already has Internet-enabled PCs, 900 local stores and the necessary printing expertise. With no shipping costs or delays and bulk printing and paper efficiencies, it could be both cheaper and faster than, for example, Amazon.

The use of 7-Elevens as book distribution outlets in Japan represents s similar, slthough perhaps uniquely Japanese, solution.

So with transaction processing costs falling toward zero, Merrill's local brokers need to become real financial consultants, while ETrade needs to match the local cash and deposit transactions that banks do so well.

Meanwhile booksellers ponder the possibilities of printing books on demand, while retailers as mundane as 7-Eleven explore ways to leverage their huge local infrastructures. It will take years for all uf this to sort itself out and for the obvious implications for IT architectures and planning to kick in.

But right now, the story is still much more one of local change than obsolescence. What's happening with your company's strategy?

READERS' LETTERS

Los Alamos: A matter of knowledge

WHILE I agree that lax computer security enabled Mr. Lee to steal nuclear secrets from Los Alamos ["Computer Security Bombs at Los Alamos," May 10], I do not agree that that item is the main story here.

The real story here is the present administration's knowledge that such acts were going on (they knew about it at least as early as 1995) and their subsequent refusal to do anything to stop them.

Jeff Durfee
MIS manager
MJ Wood Co
Jacksonville, Fla.
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EDS Logic 101

I FIND SOMETHING very puzzling about EDS's Windows 98 migration reasoning ["EDS Stays on Win 98 Path," April 19]. EDS does not trust Microsoft to properly patch Windows 95 for Y2K compliance but trusts Windows 98 to be Y2K-compliant.

It's software being made by the same company, and the company is making the same compatibility claim for both products.

I don't understand why EDS would trust any of Microsoft's operating systems if it doesn't trust Microsoft to fix Windows 95 properly.

Ricky Hardt
Houston
weasprimus@earthlink.net

False Flashback

HAVING BEEN in IT since 1956, I have been reading the Flashback articles with much interest snd nostalgia. In general, the reporters have done their research well.

However, this statement, made in the 1962 Flashback ["Degree of Distinction," April 5], is somewhat off-base: "Before EDS, s number of computer services bureaus had cropped up, offering data processing services for monthly contracts of about $500 each."

I worked at Corporation for Economic & Industrial Research Inc., Computer Sciences Corp. (CSC) and Informatics Inc., and, to the best of my knowledge, they and Computer Usage Corp. all had one or more contracts annualized to six figures. Incidentally, I know that Fletcher Jones, who started CSC with Roy Nutt and Bob Patrick, would not accept s contract of less than six figures.

George B. Sutton
Harrington Park, N.J.

Consultants as scapegoats

IN THE MAY 10 Driving the Deal, "Handshake Isn't Enough," Joe Auer makes some valid points about the need to protect yourself when hiring consultants. However, I find his overall tone too negative. The most offensive phrase is: "The consultant's primary objectives are to minimize his risk while maximizing his profits — at your expense." Of course consultants expect to be well paid for their time and want to minimize unnecessary risk — who doesn't? Mr. Auer's wording suggests that consultants are interested only in collecting a paycheck and not in doing s good job. Among consultants, as among all other people — including hiring managers — there are the good and the bad.

About 83% of projects are either late, over budget, reduced in scope or canceled. It's no wonder incompetent managers are looking for someone to blame. Consultants make a handy target.

David Luciano
Fairfield, Conn.
dluciano@snet.net

More letters, page 38

COMPUTERWORLD welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Allan E. Alter, columns editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax: (508) 875-8931. Internet: letters@computerworld.com. Include an address and phone number for immediate verification.

BILL LABERIS

Bill's new law: Broadband changes the rules

IN A COLUMN A DECADE AGO, I promulgated Bill's Law: Nothing in the IT world changes as fast as people and pundits think it will change. The law applied aptly to the proliferation of client/server computing, the death of the mainframe and so on.

Then came the Internet, and Bill's Law was history. No one foresaw the intensity and totality with which it would transform information technology, not to mention the businesses and organizations IT supports.

BILL LABERIS is a consultant in Holliston, Mass., and former editor in chief of *Computerworld*. Contact him at illl@ideals.com.

As suddenly as the Internet has changed the rules, a related phenomenon is looming that will make all Internet-enabled change appear like child's play.

I'm talking about delivering to consumers cheap broadband Internet access that's several orders of magnitude faster than what's available today. Whether that access is given via Digital Subscriber Line, broadband wireless or cable modem, phenomenally fast, ubiquitous connections will be the norm within three years.

And if you think the Internet has changed your work life, just wait until you see the disruptions broadband will bring.

Consider that Forrester Research predicts that the volume of business-to-business Internet commerce will swell from $48 billion last year to an astonishing $1.3 trillion in 2003. Now imagine what will happen in the business-to-consumer segments once broadband connectivity is universal. You can imagine the possibilities, but you can't predict the most notable ones because the applications that will leverage the bandwidth explosion haven't even been developed yet.

The situation is much like the state of the Web in 1992. Back then, the Web was just a thought. If someone had written then about the impact of global connectivity, browsers and the Web programming language HTML, no one would have listened anyway. None of what the Web has created could have been fully comprehended.

My point is simply this: Try as we may, no one can predict the applications that will be made possible by the major shift taking place in the underlying infrastructure that drives IT.

We can with some confidence make sweeping predictions of what the broadband era will demand of you and your staff. For one thing, you'll need to ensure that your systems, particularly your network, are almost infinitely scalable. As an exercise, imagine what it would take to, say, triple network or system capacity in a year. Then multiply that by two or three.

Additionally, your systems will need to support a virtual workforce. Remote workers, be they on the road or in some remote or home office, will demand services and secure data access identical to what you provide on campus. No compromises will be tolerated.

Finally, the proliferation of telecommunications companies and services — such as virtual private networks — will make it increasingly desirable, if not a requirement, for IT to aggressively seek outsourcing options.

That's plenty to work on. Don't worry yet about those killer apps — no one can predict them. But they're out there, probably locked in the cranium of a twentysomething MIT student, waiting to be sprung by the broadband revolution. ◗

GARY H. ANTHES

IT skills shortage? Not among high school students

IT'S EASY to be humble in my job. On any given day, I might interview a Nobel Prize winner, a billionaire entrepreneur or a university professor who's the leading authority on some topic.

GARY H. ANTHES is *Computerworld*'s editor at large. Contact him at gary_anthes@computerworld.com.

But I have never felt quite so intellectually inept as I did recently at the Intel-sponsored International Science and Engineering Fair in Philadelphia. I will never again hear about a high-tech "skills shortage" without thinking of those 1,159 teen-agers who made it to the science fair summit by winning a top prize in a regional, state or national competition.

Sean Stanek, a high school senior from Des Moines, Iowa, reinvented 3-D computer graphics. I exaggerate only a little. Unhappy with the speed of existing PC graphics software, he taught himself assembler language and then wrote new routines based on "theory I read in a whole bunch of books." He turned the theory into algorithms for vector arithmetic, polygon filling and clipping, and 2-D projection. His code runs four times faster than the equivalent commercial software, he says.

"We got our first computer when I was 3, and I loved to play games on it," Stanek says. "But when there were no more games to play because I had beaten them all, I started programming." I forgot to ask him if his code is Y2K-compliant.

Alexander Clark, a junior from Jackson, Miss., wrote a "suite of applications and tools" — essentially firewall and intrusion-detection software — for network security. Clark has been a network wizard since fifth grade, it seems.

At his display booth, Clark had four 4-in. binders stuffed with program listings, but he said that was just an "excerpt" of his code. "I tried to cover everything from remote network administration to Internet filtering by proxy server, IP filtering, Windows sockets filtering and even process filtering," he says.

Now in daily use at his school, Clark's software contains the prototype of something he says he hopes to perfect for next year's science fair. It uses vector analysis, color recognition and fuzzy logic to recognize and block pornographic images. His display posters next year ought to be interesting.

Catherine Havasi, a senior from Murrysville, Pa., won a prize for her "multilayered system of feed-forward neural networks for the improved depixelization of enlarged bit-mapped images." When I spotted that at the top of her poster, I knew immediately she had devised a way to make big digital images look smooth and clear. Indeed, they are "15.4% better than you get with state-of-the-art filtering," she says.

Havasi taught herself C++ and neural network theory. "Neural nets were just an extension of the artificial intelligence and fuzzy logic work I'd done for previous science fairs," she shrugs.

You can learn about Nathaniel Duca's prize-winning NetRadar by downloading it free from *http://brainsoft.ne.mediaone.net/netradar/*. Once you do, agent software on your computer will periodically ping hundreds of Internet sites worldwide to measure Internet performance and report bottlenecks. It keeps a log of that activity and reports trends in the performance of your connection.

Duca, a junior from Wenham, Mass., says NetRadar has nearly 2,000 users and is far more accurate than similar commercial tools because it takes a much broader view of the Internet.

Wondering if any of these young geniuses had any interest in mainstream corporate computing, I asked each of the science fair winners what they wanted to do when they grew up. I expected them to say they hoped to become computer science researchers or chief scientists at software companies. But I was surprised and pleased to learn that they had very down-to-earth goals. An IT shop at a bank or insurance company would be just fine, thank you, provided the challenges were there.

"I've been the IT force at my school," Clark says. "So I can see being in an IT department at a company where they say, 'Here are the needs,' and I go for it." ◗

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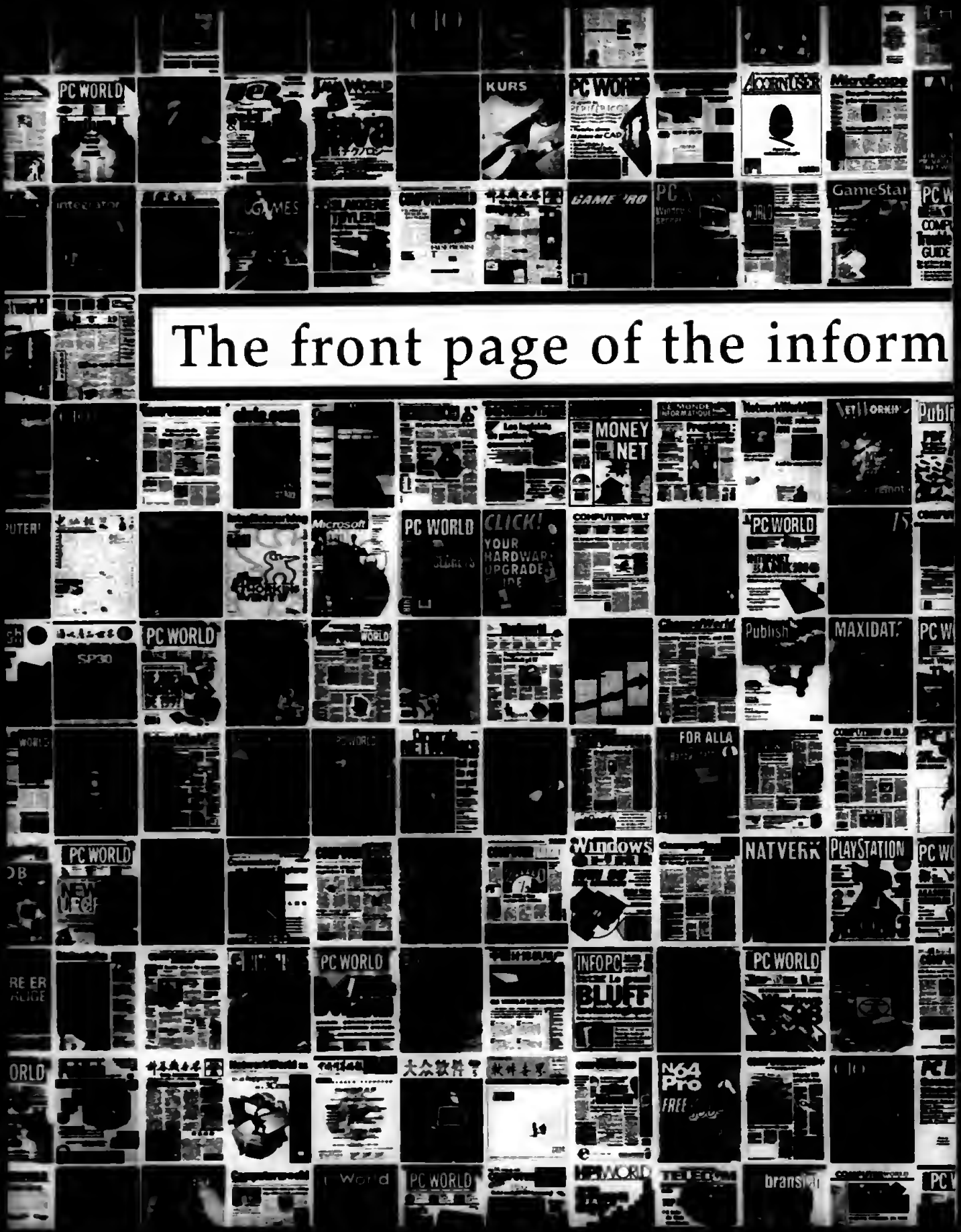

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READERS' LETTERS

Lines of code a superficial measurement of U.S. programmers' productivity, according to *CW* readers

REGARDING your April 12 front-page article "Are U.S. Programmers Slackers?" I should like to suggest that lines of code measures very little.

I'm employed as a developer with a major OEM telecom firm, and I will certify to you that the last thing we need is raw output. Paradoxically, it takes more time to write smaller, faster code, but image size and throughput are always going to be real-time issues. It is always desirable to discard more lines of code than you write, given equivalent function.

Would that be negative productivity?

Larry Brunelle
Allen, Texas
brunelle@acm.org

YOU MUST be kidding! Does anyone really think number of lines of code is a valid measure of productivity? That's like saying the thickest term paper is the best. Systems are best developed with constant communication between users and programmers in an environment where the programmers have some experience in the business. Buggy code from offshore programmers is no surprise. Anyone being measured by quantity will produce bloated, buggy code.

And offshore programmers have the disadvantage of attempting to code solutions to problems they probably do not understand. Many of us are not convinced there is any labor shortage. Look at the number of layoffs.

My experience in finance leads me to believe that at least part of the purported shortage is a fiction maintained by management wishing to spend less for staff so they can spend more on their own salaries and bonuses.

Don Lesure
Programmer/analyst
St. Paul, Minn.

SHAME ON *Computerworld* for reviving the lines-of-code myth about programmer productivity. IT professionals are supposed to be business partners, according to a special report in the same issue ["Tomorrow's IT"]. According to an IT professional quoted in one of those articles, "Computer professionals need to be more aware that they are 'businesspeople with an IT specialty.'"

What a deal. We can read *The Wall Street Journal* and have an MBA, but our value is still measured in Jurassic Lines.

It logically follows that Howard Rubin's productivity is measured in pages of output and "Chainsaw Al" Dunlap's productivity was measured in number of people fired.

IT people are knowledge workers, not machines. Using a mechanical measurement of productivity is bogus at best and insulting at worst.

William B. Young
Simpsonville, S.C.

IT'S ASTONISHING that the line-of-code metric is still being used, anywhere, for any purpose. More startling still is that this bogus bean count is being cited by Professor Howard Rubin, an otherwise creditable student of our business.

Lines of code was long ago discarded as a useful estimator of cost in any domain of programmer effort.

Fortunately, the article included some alternative explanations for the results of the study.

The European viewpoint toward software technology is different from here. In general, Europeans view the activity with a distinctly engineering eye.

Dare we say they manage less and engineer more?

Colin Stewart
70312.3714@compuserve.com
Sparta, N.J.

THE ONLY hard evidence presented in the article is a study that assumes that lines of code per programmer per year is a standard measure of productivity. Then the author alludes with approval to the suggestion that "one alternative is to tap reusable software components and object technologies to improve software development productivity."

Fine. But obviously this alternative will result in fewer new lines of code being written. So will reusable software components make productivity better *and* worse?

David Ellis
Macon, Ga.
david.ellis@mailcity.com

THOMAS HOFFMAN'S article pushed a lot of buttons! I disagree with the suggestion that more lines of code equals greater programmer productivity. What if a 1,000-line program can be rendered in 100 lines of documented code that runs in a fraction of the time? By using [lines of code] as the measurement for productivity, we promote inefficiency and redundancy. It is easier to mass-produce "quick-and-dirty," illegible code than it is to create efficient, easy-to-modify-later code. I also challenge the notion that U.S. programmers as a group are overpaid and complacent.

Most of my corporate-world friends are stressed, challenged to keep up with endless meetings, projects, administrative tasks and committees, and often work 10 hours or more a week overtime (typically unpaid) just to find time in complete regular assignments.

Sandy Sampson
Principal analyst
InfoSpin
Medford, N.J.
ssampson@infospin.com

IT project management not an easy bull to ride

THANK YOU for Gopal K. Kapur's excellent May 3 column, "Why IT Project Management Is So Hard to Grasp."

I have long felt that the IT project management profession was advancing only as rapidly as we plagiarized ideas from our clever engineer friends.

However, Kapur raised the interesting notion that project management is actually more difficult. I have since thought up some additional reasons for this:

- IT projects are much more political, since they entail substantial change to businesses and people's work environments.
- Engineering project clients tend to understand and respect project control processes, such as change control, better than IT project clients.
- IT projects usually benefit less from iteration. For example, a team usually implements only one system before the team is dispersed to work on other teams building different applications. Good widget engineers tend to be rewarded with new widgets to engineer.

How can we take advantage of this knowledge?

Given the fact that IT projects are more difficult than engineering projects, how should IT project management be different from engineering project management?

Douglas Heiland
Manager, systems integration
Electronic Data Systems Corp.
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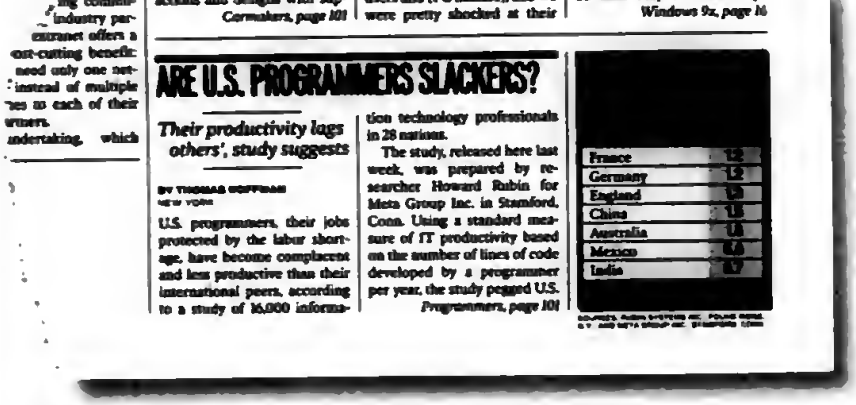
A reader mourns the loss of alt.cw

I RUE YOUR decision to axe the alt.cw page from the newspaper. This was clearly the most interesting section of *Computerworld*, and I would always begin reading by turning to the alt.cw page first. Put some humor and spice back into your pages and return alt.cw to its rightful place.

Phil Hall
New York
Opencity@aol.com



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Carmakers, page 101
...ning on "dead-ending
...dows 98 code base," but not just yet. "We've been talking to users and [PC makers], and we were pretty shocked at their
Brunit said. "Microsoft is naive to think we want or can do that. Maybe another up-
Windows 9x, page 16

ARE U.S. PROGRAMMERS SLACKERS?

Their productivity lags others', study suggests

BY THOMAS HOFFMAN
NEW YORK

U.S. programmers, their jobs protected by the labor shortage, have become complacent and less productive than their international peers, according to a study of 16,000 information technology professionals in 28 nations.

The study, released here last week, was prepared by researcher Howard Rubin for Meta Group Inc. in Stamford, Conn. Using a standard measure of IT productivity based on the number of lines of code developed by a programmer per year, the study pegged U.S.
Programmers, page 101

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BUSINESS

AIRLINE LOGISTICS

Think your supply chain is complicated? Try planning 100,000 meals per day for airlines that change their orders right up to a plane's flight time. Then track those changes simply with little slips of paper. Toronto-based Cara Airport Services found an automated alternative. ▸ 43

CERTIFICATE AUTHORITY

Wells Fargo has teamed up with GTE Cybertrust to offer digital certificates to increase its e-commerce business — and that of its merchant customers — in the process. ▸ 44

PAYROLL PREDICAMENT

Paycheck giant Automatic Data Processing will have a huge problem if its core applications stop running Jan. 1 — and so will the one quarter of U.S. workers whose paychecks it cuts. This Q&A with ADP's Y2K boss James Kinder might calm some of those fears. ▸ 46

IT IS ON THE LINE THESE DAYS

It's not enough for IT to manage back-end transactions and technology, Peter G. W. Keen warns. E-commerce means that IT will be front-and-center with the customer and must take responsibility for profits, too. ▸ 50

REGULATORY RUNAROUND

The federal government has a huge impact on issues involving encryption, privacy, Y2K, antitrust and Internet taxation. We wrap up the issues and profile some key players. ▸ 52

VISA LIMITS

Hundreds of thousands of IT jobs are going unfilled, but the U.S. government is reluctant to let in foreign techs to fill them all. IT groups lobby for more tech visas, but most companies will have to ratchet up training. ▸ 56

MIDCAREER BOOST

A two-year technical degree may not be the best option if you're just starting out. But if you're a midcareer changer or just someone looking for a little extra oompb in your professional development, it may be just the thing. ▸ 60

BUSINESS QUICKSTUDY

What can an income statement tell you about where to spend your IT dollars and time? A lot, if you can figure out how to shore up the bottom line. ▸ 65

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OWENS & MINOR'S DON STOLLER and his team [illegible] won awar[illegible]mpany's data warehousing pr[illegible]

WORK SMARTER, NOT HARDER

PUTTING IN LONG HOURS won't make you the star of that hot IT project — if you're not spending your time the right way. In fact, stars may even work *less* than the average schmo because leaders stay focused without losing sight of the big picture and know whom to talk to when they need answers.

58

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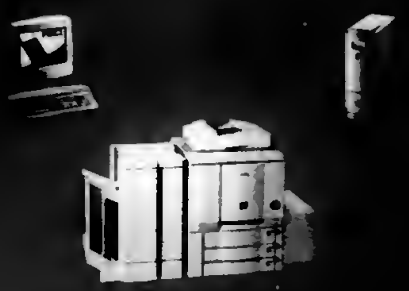
improving the world of color.



Airline Food Vendor Seeks 7% Savings on Production

Says $13M ERP, supply chain system will pay for itself in 4+ years

BY CRAIG STEDMAN

CARA AIRPORT Services supplies more than 100,000 meals each day to more than 50 airlines in Canada. But the daily production schedule prepared by a homegrown mainframe system largely amounts to guesswork.

And after the schedule is set, things get even trickier. Meal orders change fast and furiously right up until planes take off, and many are forwarded to Cara's 11 airport kitchen facilities on slips of paper.

Passengers get their food, "but not in a very efficient manner," said Kate Plant, manager of information technology at the Toronto-based company. "We do things now by throwing bodies at them or by making extra meals when we don't need extra meals."

Now, Cara hopes to save itself and the airlines money by using a combination of enterprise resource planning (ERP) and supply-chain management software to do more precise production scheduling.

CARA'S FRANK CRESS: The system will automate late changes in orders

The Unix-based software — J. D. Edwards & Co.'s OneWorld ERP applications tied to a planning package made by SynQuest Inc. in Atlanta — will be tested this fall. Rollouts are expected to start next spring.

Frank Cress, regional manager of Cara's Western Canada operations, said the upcoming system was designed to more accurately synchronize the different departments in each kitchen than the mainframe does now.

The process of dealing with late changes will also be more automated, Cress said. New meal orders will be processed on the fly and sent to PCs in the kitchens, rather than on pieces of paper that "may slip through the cracks," he said.

If the system works, Cara will have to assign employees to monitor menu changes for only the final 15 minutes before a flight, rather than an hour.

Cara isn't your typical supply-chain user, said Stephen Cole, an analyst at Forrester Research Inc. in Cambridge, Mass. Most others are manufacturers that do longer-term planning and change the plans only once per day, he said.

Cara wants to pump new work orders to the kitchens as they come in from airlines. But Plant said she's still waiting to test a J. D. Edwards-to-SynQuest interface due out this week to make sure that's feasible.

At the least, she added, the company needs to be able to transmit batches of changes every 15 minutes.

Despite the uncertainties, Cara is projecting big savings: up to a 7% reduction in the $130 million (Canadian) it spends on meal production each year. The company expects payback on the $13 million project in four to five years, Cress said.

IT Labor Report: Cast Wider Net and Train

Concludes there is indeed a shortage

BY SARA COLE-GOMOLSKI

During the next few years, companies will have to cast an even wider net for information technology workers and invest more heavily in training programs to get workers ready for the job.

Those are among the key findings in a report recently released by the Computing Research Association (CRA), a group made up of computer science departments at some of the nation's top universities.

CRA's government-funded report, "The Supply of Information Technology Workers in the United States," concluded that there is indeed a shortage of qualified IT professionals but stopped short of quantifying it. Controversy about the severity of the shortage has been raging since the Information Technology Association of America last year reported that there were 346,000 open IT jobs in the U.S. Critics say the "shortage" is caused by companies unwilling to hire older workers or train workers on new technology.

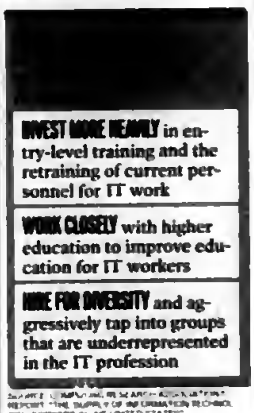
The CRA report encourages companies to tap groups that are underrepresented in IT, such as women and minorities, and work closely with colleges and even high schools to encourage students to choose IT careers. It also warns that most firms will have to pluck at least some candidates from non-IT disciplines and train them.

None of the report's recommendations surprised Ari Phillips, manager of IT college recruitment at Sears, Roebuck and Co. in Hoffman Estates, Ill. The retailer just completed the first year of its business IT program in conjunction with Florida A&M University in Tallahassee. The program, which consists of five classes and an internship, is open to students who have already obtained a degree or are in pursuit of a degree outside IT.

"We are growing our own programmers," Phillips said.

IT outsourcer Whittman-Hart Inc. in Chicago has also invested heavily in training IT workers. The firm's 1,500-course curriculum lets consultants take many classes via the Internet.

The extensive training program is one of the reasons the company has grown from 1,700 employees in 1997 to about 3,000 today, said Ed Szofer, president of the firm.



SOURCE: COMPUTING RESEARCH ASSOCIATION REPORT, "THE SUPPLY OF INFORMATION TECHNOLOGY WORKERS IN THE UNITED STATES"

Outtasking: A Custom Fit

Midsize users adopt it for net management

BY SAMI LAIS

More companies are hiring services to manage their ever-growing networks, but the costs — in dollars and loss of control — can be too high for all but the largest businesses. For many others, there's outtasking.

Outtasking lets a company decide which aspects of network management it wants to outsource. And unlike outsourcing, which often means layoffs, "with outtasking, it's more you're off-loading management of some task that's hard or new or scary," said Kitty Weldon, an analyst at The Yankee Group in Boston.

U.S. companies will spend $2.6 billion on outtasking this year and $3.5 billion next year. Much of the spending will be by midsize businesses with up to 100 locations and annual revenue of less than $500 million.

Produce distributor Fresh America Corp. in Houston uses a wide-area network management service called ProWatch from NetSolve Inc. in Austin, Texas. O. D. Soles, Fresh America's information technology manager, uses a Web browser to navigate the interface NetSolve provides to get a real-time window on how his 16-site, frame-relay network is doing. "If there's trouble, he can see the [trouble] ticket; he can watch us work the ticket," said Craig S. Tysdal, president of NetSolve.

If Fresh America doesn't get a minimum 99.5% availability through the router, it gets its monthly fee back. The price tag for NetSolve to manage a 10-site network is $2,200 to $2,300 per month, Tysdal said.

Dan Amedro, CIO at real estate firm Archstone Communities in Denver, considered large outsourcers to build and maintain a network that connects PCs at 250 sites. But he opted for outtasking, also with NetSolve, because the company was more focused on his business, he said.

Wells Fargo Becomes Certificate Authority

Is one of the first banks in U.S. to issue digital certificates under its own brand

BY ANN HARRISON

THE CURRENT upheaval in the financial services industry — in which recent mergers have spawned huge financial conglomerates — has prompted a large California retail bank to expand its competitive muscle by becoming a digital certificate authority.

Walnut Creek, Calif.-based Wells Fargo & Co., which provides credit-card processing services to 2,500 e-commerce merchants, is offering SureServer digital certificates to both current merchant account holders and non-Wells Fargo merchants. Digital certificates are used to authenticate the identity of merchants and purchasers in online transactions.

Wells Fargo is offering the certificates through a partnership with Needham, Mass.-based GTE CyberTrust, a developer of secure extranets and e-commerce services. The certificates are issued through CyberTrust's OmniRoot system, which has preinstalled root certificates in popular Web browsers, allowing authenticated consumer transactions.

Since June 1, SureServer digital certificates have been available for free on a four-month trial basis when a merchant opens a new account. The certificates usually cost between $300 and $400.

While other businesses offer certificates through third-party providers, Wells Fargo is one of the first U.S. banks to issue certificates under its own brand. Abner Germanow, an Internet analyst at International Data Corp. in Framingham, Mass., said a certificate issued by Wells Fargo instead of GTE CyberTrust will make consumers more confident about whom they are actually doing business with.

> Organizations that can move faster than others and offer more services will be in a better position.
>
> JAMES HURLEY, ANALYST, ABERDEEN GROUP

Michelle Banaugh, Wells Fargo's vice president of e-commerce, noted that many e-commerce vendors are start-ups that aren't well-known to consumers. A 1998 report by Forrester Research Inc. found that 96% of catalog shoppers haven't purchased online because they aren't completely comfortable with Web security.

Digital certificates may enhance consumer confidence because Wells Fargo investigates each business before allowing it to display the certificate seal on that merchant's home page.

James Hurley, an analyst at Boston-based Aberdeen Group Inc., said the move will allow Wells Fargo to build its brand and offer trusted services that will give it a foothold in an increasingly competitive market.

"Organizations that can move faster than others and offer more services will be in a better position," Hurley said.

UUnet Employee Finds Plenty of Support for Web Venture

Big backers help online operation

BY STACY COLLETT

So you have a great idea for the next big Internet company. Should you cash in your stock options and go for it? Sure — as long as you have friends in high places.

UUnet Technologies Inc. employee Paula Jagemann did just that, and today she's CEO and president of Online Office Supplies Co. (OOSC), a $6 million, business-to-business office-supply company. The business is a UUnet customer, and she's still an employee.

Opportunity Knocks

Jagemann, 32, is executive assistant to John Sidgmore, CEO of UUnet, the Internet services division of MCI WorldCom Inc. in Fairfax, Va. Frustrated with the scarce office-supply offerings available on the Web at the time, Jagemann decided to start her own online business early last year, selling $500,000 in UUnet stock options to generate seed money.

She started by working on a business model with Goldman Sachs analysts whom she knew from speaking with UUnet investors.

She then signed on $3.5 billion wholesaler United Stationers Inc. in Chicago to provide products. But it wasn't easy to attract the wholesaler's interest — until she mentioned her affiliation with UUnet. "I went from random phone-caller to instant credibility," Jagemann recalled.

On the advice of UUnet's Web experts, she brought in Web development firm NDC Group Inc. to create a business-to-business Web site with built-in purchasing requirements, custom catalogs and report access.

Arlington, Va.-based NDC Group developed the site at cost, for about $500,000, because it had previously developed Web sites for UUnet, Jagemann said. "The project would otherwise have cost millions," she said. OOSC's servers are housed at UUnet.

Finally, she called a half-dozen high-tech CEOs and technology leaders whom she had met in her job at UUnet. Within 20 minutes, she gathered a board of directors with a combined net worth of $1.8 billion, including Sidgmore; Daniel Rosen, general manager of new technology at Microsoft Corp.; Mory Ejabat, CEO of Ascend Communications Inc.; Sky Dayton, chairman and founder of EarthLink Network; and Don Clarke, chief financial officer at Net2000 Communications. OOSC launched its Web site (*www.onlineofficesupplies.com*) last August.

Could that happen to any employee with an entrepreneurial spirit and friends in high places — not to mention a hefty stock portfolio?

"It's certainly possible, but I don't see this as a general trend," said Sidgmore, who has worked with Jagemann for 11 years. Sidgmore wasn't aware of Jagemann's start-up plans until three months before the launch, but by December he had invested $250,000 in OOSC. "Executives from other companies have come to me, but I can't recall a regular employee coming to me for advice," he said.

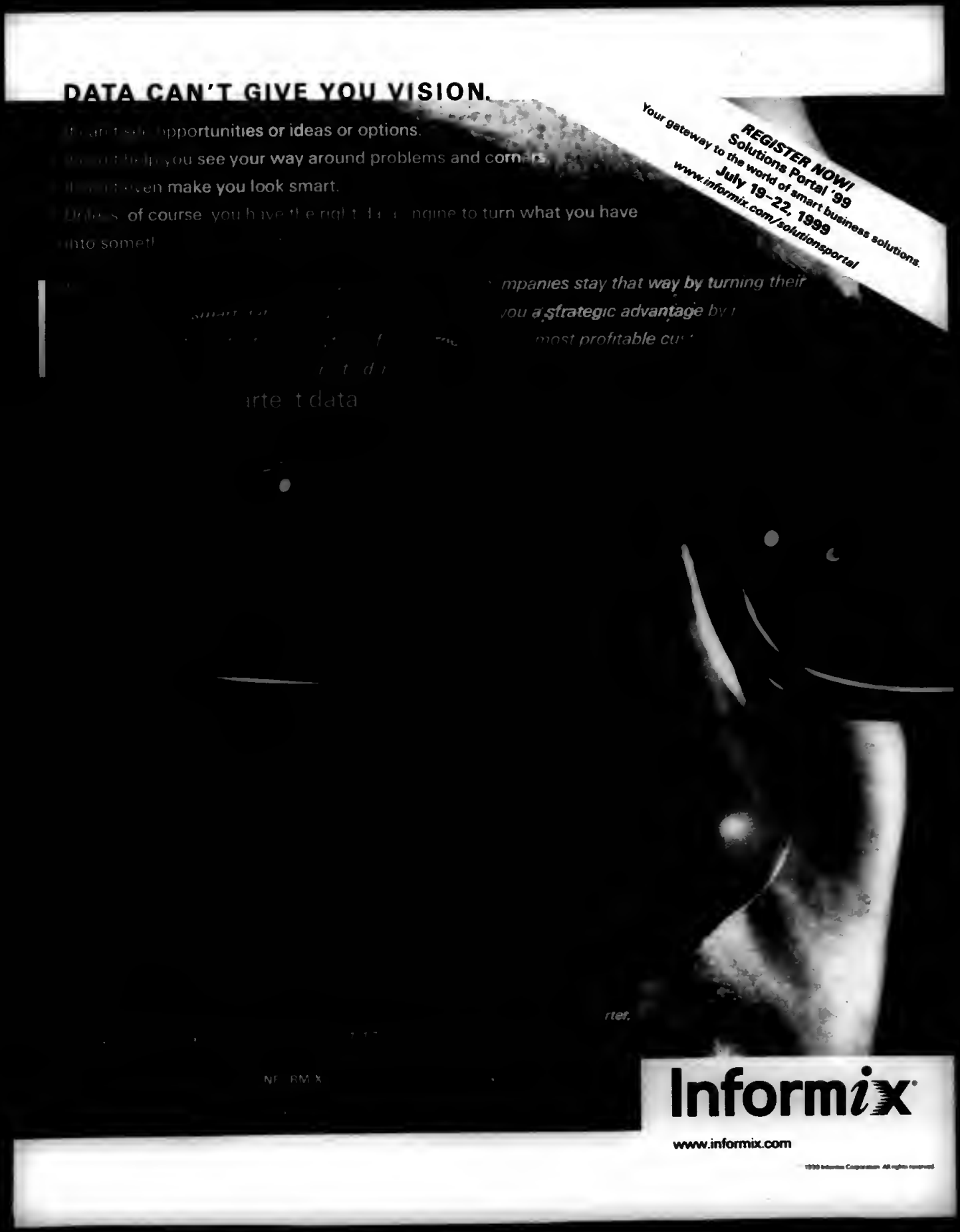
Rosen has known Jagemann since the early days of UUnet. When she called him at home and asked him to serve on the board, he quickly accepted. OOSC "has great potential and is being done in a very good way," Rosen said. But would he have jumped at that opportunity if Jagemann were a stranger? "Difficult to say, but maybe. I certainly would've taken a look at it," he said.

WITH A GOOD IDEA, $500,000 in seed money and friends in the right places, Paula Jagemann built a $6 million online office-supply company

Branching Out

Jagemann is preparing to announce a joint venture that will provide a server farm with rental space available for small to midsize stationers to sell online, as well as agreements with three major portals to sell office supplies from their sites. She said she will be taking in $12 million in venture capital next month.

"This was more blind faith in Paula — and maybe somewhat for me — than anything else," Sidgmore said. "She's very creative, enthusiastic, high-voltage. If there's an opportunity there, she's going to find it."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BRIEFS

Y2K Lobbying

The Y2K coalition – a consortium of trade associations and industry groups – last week urged Senate Democrats to pass the McCain-Dodd Y2K Act. Put forward by Sens. John McCain (R-Ariz.) and Christopher Dodd (D-Conn.), the proposed year 2000 bill seeks to reform rules governing potential lawsuits over the Y2K problem. Included in the proposals are caps on punitive damages and limits on class-action suits. By a 52-47 vote, the Senate rejected an effort to move the act to a final vote earlier this year. All Democrats voted against the measure.

NYSE to Close Early

Even though Wall Street has successfully passed a barrage of Y2K tests, the New York Stock Exchange's board has approved a plan to close the stock market at 1 p.m. EST Dec. 31, instead of its usual 4 p.m. closing. The move was designed to give the securities industry a few more hours to settle its year-end processing and make last-minute, year 2000-related preparations. The Nasdaq Stock Market Inc. also plans to close early on New Year's Eve.

Protection for PCs

UniTrends Software Corp. in Myrtle Beach, S.C., is offering software that it says protects and recovers data stored on network-attached, Intel Corp.-based PCs. PC ParaChute lets network administrators fully recover a system that crashes without having to reinstall the operating system, add-ons, registry, upgrades and software packages.

Compliant	47%
Nonresponsive	27%
Manufacturer has merged or has been bought out	13%
Conditionally compliant	7%
Noncompliant	3%
Pending	3%

How Payroll Processor Got Ready for Year 2000

ADP's Y2K czar: Company completed work on core system more than a year ago; international units 'in pretty good shape'

Working diligently to make sure that much of the U.S. workforce gets paid on time next year is **James Kinder**, director of the Y2K program office at Automatic Data Processing Inc. (ADP), the Roseland, N.J.-based payroll processing giant that processes the paychecks of 35 million people worldwide. *Computerworld* senior editor Thomas Hoffman recently caught up with Kinder to get his thoughts about his company's progress.

Q: Some companies, including ADP, are placing freezes on installing new applications later this year to maintain your 2000-readiness. Can you explain this?

A: We practically stopped product development [on ADP's payroll processing applications] for eight months to get our arms around Y2K. We didn't stop development entirely, but we slowed it down considerably while analysts, programmers and testers worked in phases on our year 2000 project.

We accelerated the completion of our core payroll product, AutoPay, by four months and finished that in March 1998. We needed to free up our [IT] resources to work on [IT projects other than Y2K].

ADP's JAMES KINDER: "We practically stopped product development for eight months to get our arms around Y2K"

Q: Unlike most companies, which have opted to 'window,' or roll back, the internal clock on their software programs to meet the Y2K deadline, ADP instead chose the more expensive and time-consuming route of expanding the date fields of most of its 135,000 software programs. Why?

A: With windowing, it's less accurate, and it's only a short-term fix — you still have to go in and fix those programs eventually. We had a few exceptions where we windowed some of our older, DOS-based products that we plan to retire eventually.

Q: Are your international business units on track?

A: We're in pretty good shape overseas. We're on our third audit since 1997.

We use an internal audit team that reports up to senior management. [The audit team uses] the same template for, say, ADP Germany and ADP Brazil.

We use ratings where 'green' means the project is on schedule; 'yellow' means there are some concerns; and 'red' means there are big concerns.

We found that some [business units] were lagging, but there were no real surprises. Some people that are 5,000 miles away in Europe may not have seen [Y2K] as a top priority.

But the audit results would lead senior management to tell division presidents [in each country] to invest more [in their respective Y2K projects].

Q: Are your international customers ready?

A: For the most part. But with some customers in Europe, if you send them [year 2000-ready product] upgrades, they say, 'We'll get to it when we get to it.'

Web Site Spreads the Word

Targets health care, environmental safety

BY STACY COLLETT

Despite assurances by health care and environmental industries that year 2000 glitches will be minimal, community organizations are gearing up to inform the public about Y2K readiness and to respond to failures, especially in poor or rural communities that don't have large infrastructures.

The Center for Y2K & Society, a Washington-based group that helps nonprofit organization raise Y2K awareness, has launched a Web site to help prepare communities for potential Y2K disruptions (*www.y2kcenter.org*).

The site offers Y2K-readiness information about the health care, public and environmental safety sectors and lists actions that community leaders, groups and consumers can take to prepare for Y2K. Site features include checklists, templates for proclamations and draft laws to provide oversight and independent auditing of compliance.

"Some 85 million Americans live within five miles of a chemical processing plant. And in vulnerable communities, people are dependent on [prescriptions]. Medicaid payments and welfare payments. Our civic leaders need to make considerations," said Philip Bogdonoff, director of outreach for the Center. If there are Y2K failures, there may be increased demands on food banks, shelters and health clinics, he said.

The Center also plans to donate more than $250,000 to nonprofit organizations working on Y2K issues. The Center is funded largely by charitable and other public-policy nonprofit groups.

SNAPSHOT

Fortune 500 rank	72	82	111
Costs	$194M	$41M	$84M
Estimate of total costs	$215M to $250M	$85M to $90M	$120M to $135M
Estimate as of 9/30/98	$215M to $250M	$70M	$160M to $175M
Notes	Expects to complete testing, validation and quality assurance review phases for its remaining IT systems by June 30.	System-integration testing for mission-critical IT systems scheduled to be completed by June 30.	No flight safety problems related to year 2000 after review of Y2K impact on aircraft fleet and onboard flight support systems.

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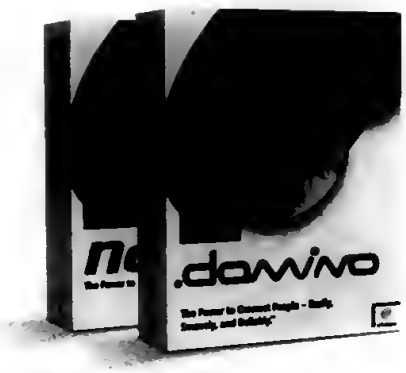
*Collaborative Research Study, John Katsaros, 1999 based on this study "Mad Plus The Real Issue in Comparing Lotus Notes/Domino with Microsoft Exchange" not only is the Total Cost of Ownership (TCO) of Lotus Notes/Domino and Microsoft Exchange essentially the same but a Lotus Notes and Domino solution provides far more messaging functionality and value than Microsoft Exchange. You may have found Microsoft's "99.9% reliability" claims difficult to digest. Exchange is limited to the performance and reliability of the NT platform, which has been shown to have only 97.64% availability according to the IDEAS/Gartner study October 1998. Lotus Domino runs on NT as well as platforms such as S/390 that provide 99.998% availability. Sales data based on total Notes seats according to EMMS 4Q 1998 Report



Granted, Microsoft Exchange® can be adequate. Adequate if you've limited your choices to a single platform and you're comfortable replacing your existing mail system with just another e-mail system. More likely, you need a truly cross-platform solution that meets your real-world needs and grows as your business grows. One that gives you the option to run on many different systems – like Windows NT,® AIX,® Solaris,® AS/400,® S/390® and HP/UX® – without being dependent on a single one. One that is really scalable, highly robust and doesn't come with a host of hidden costs. One that provides integrated collaboration tools to enhance productivity and increase your responsiveness. That solution is Lotus Domino™ – the worldwide messaging leader. And the one chosen by savvy customers such as Kaiser Permanente, Herman Miller® and The California Department of Transportation. For the real story, or to get your free Lotus super.move™ Migration Evaluation Kit, visit **www.lotus.com/messagingsupermove**

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BRIEFS

IRS Awards $120M Contract

The Internal Revenue Service has awarded a $120 million contract for electronic delivery and maintenance of Microsoft Corp. software for 130,000 PCs. The 65-month pact signs up Internal software store Beyond.com in Sunnyvale, Calif., and Intelisys Technology Corp. in Fairfax, Va. Applications include Windows NT Server, Exchange Server 5.5 and other BackOffice software.

Handheld Use Expected to Rise

Two separate figures show tremendous growth in sales of handhelds and smart phones; the adoption of these devices will require better preparation by IT managers, according to analysts. Dataquest in San Jose predicts worldwide sales of handheld computers will hit 21 million in 2003; International Data Corp. in Framingham, Mass., projects sales of nearly 19 million handhelds in 2003. Handheld sales were about 4 million last year.

Market Carefully To Kids Online

Companies that want to sell goods to youngsters online should do so responsibly or risk alienating parents, according to a recent survey of 600 youths by New York-based Jupiter Communications LLC. Jupiter predicts that techniques that teach kids about fiscal responsibility, the sales of money and evaluation of products will be most successful.

Advancement to management	70%
More interesting work	71%
Nonmanagement advancement	57%
Professional development	32%

NEW BOOKS

Knowledge And Your Rivals

The author of *The Monster Under the Bed* and founder of InterChem, the International Corporate Learning Association, returns to print with a look at how companies can develop knowledge communities that will help beat their rivals. Jim Botkin's *Smart Business: How Knowledge Communities Can Revolutionize Your Company* (The Free Press, 297 pages, $26) examines the strategies of AT&T Corp., Chevrolet Motor Division, Xerox Corp., Skandia Insurance and Sweden Post Ltd.

Darwinism On the Web

Evan I. Schwartz, author of *Webonomics*, uses his latest book to show how to compete on the Web after the boom is over, the bubble bursts and the Web becomes a Darwinian jungle. *Digital Darwinism: 7 Breakthrough Business Strategies for Surviving in the Cutthroat Web Economy* (Broadway Books, 240 pages, $25) will be published this week.

PETER G. W. KEEN

Secret to e-commerce

FOR IT, e-commerce is a challenging opportunity, a blend of old skills and new directions. One part of e-commerce is IT management. The same old stuff is still critical: the legacy systems curse, data management, operations and all the burdensome complexity systems that IT professionals face every day. What makes electronic commerce new — and demands new IT learning — is IT's responsibility for the customer relationship and its role in creating the profit structures that influence its stock valuation.

Of course, IT has long been a part of customer service, but mainly in terms of transaction management. The typical bank ATM network and airline reservation systems have been transaction factories for decades.

But transactions are the equivalent of buying coffee at a 7-Eleven. Relationships are much more: collaborating with a trusted financial adviser or having your hair cut by your favorite barber. Dell, Charles Schwab, Amazon.com and Cisco are online favorites even though there's often a cheaper seller.

Building strong customer relationships is the key to e-commerce success, not excellence in transaction processing, important as that is.

The reason is straightforward: The cost of acquiring customers and investing in infrastructure and support are so high that repeat business is essential. If you get stuck at the transaction level, you may have superb IT, but you don't have relationships — the only path to sustainable profitability.

The e-commerce winners have all three: IT management, customer relationship and a profit structure. Cisco's formula is typical: Manage the sales transaction side, then provide research and evaluation tools for comparison shopping and self-configuration. Turn your back office into the customer's self-management front office, streamlining your own processes and cementing the relationship. Customize the front-end interface; add seminars and interactive access to experts; open up spaces for communities to form. Extend the variety and range of options you offer to create a branded hub.

Amazon.com's financial "losses" look like a little less of a problem in this light. It's following a systematic economic model: spend to get customers (more than 20% of its revenue); keep them (close to 70% repeat business); bond with them ("My Amazon" personal mini-site, alerts, status information and other relationship communications); collaborate; add new business at a low marginal cost and at low new customer acquisition cost.

The other e-commerce first-generation hall of fame companies display the same underlying combination and evolution. Dell and Cisco are absurdly profitable; that valuation perception applies to as-yet unprofitable companies because the market sees the IT relationship-profit structure linkage. It sees that Amazon is cash flow-positive already. In an industry with 3% to 5% operating margins, it has a repeat business incremental margin of more than 80%. Basically, the e-commerce game is about substituting heavy fixed customer acquisition and infrastructure costs that enable high transaction operating margins for the traditional business's higher variable costs and lower margins. You lose the game if you don't get the repeat business; that comes only from sustained relationship-building.

Building customer relationships is the key to e-commerce.

So what's the role of the IT organization? It obviously retains most responsibility for IT, though only in partnership with designers inside and outside the firm, with systems integrators and with technology/e-commerce partners. What does it do to meet the company responsibility for customer relationships? Surely it's not enough to shrug one's shoulders and say, "That's marketing." Accountability for P&L? Again, it's not enough to say, "That's not our job — we're IT."

The agenda for IT is to learn to lead this triad of technology plus customer relationship plus new profitability structures. What an opportunity. And what a learning agenda.

Keen is chairman of the Keen Group's three business units: Innovations, Education and Knowledge. He can be contacted at peter@peterkeen.com.

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IT & The Feds: The Five Issues

Here are five areas where government policy will impact corporate IT — and three people who could make a difference. By Gary H. Anthes and Patrick Thibodeau

Encryption

Encryption is the most debated information technology issue on Capitol Hill. Law enforcement and intelligence agencies want to keep unbreakable codes out of the hands of spies, terrorists and criminals, so the government blocks the export of strong encryption. It also promotes a scheme called "key recovery," where domestic users could have their encrypted messages cracked by law enforcers who obtain their encryption keys with a court order.

The FBI has pushed legislation that would make it a crime to make, distribute or import for use in the U.S. encryption products that don't include key recovery.

Nearly everyone outside government, and many in Congress, oppose those ideas. Users worry that key recovery would invite abuses of privacy and thereby inhibit e-commerce. IT vendors say the export rules put them at a disadvantage against foreign competitors, who can sell strong encryption with impunity.

"The government's record of privacy violations means that any broadening of its snooping powers must be viewed with the gravest concern," writes Whitfield Diffie, distinguished engineer at Sun Microsystems Inc., in his recent book, *Privacy on the Line: The Politics of Wiretapping and Encryption* (MIT Press, Cambridge, Mass.; 360 pages; $30; hardcover).

The White House has loosened export restrictions over the past few years but still bans most exports of encryption products with keys longer than 56 bits, a weak level of protection in many experts' views.

In February, U.S. Reps. Bob Goodlatte (R-Va.) and Zoe Lofgren (D-Calif.) introduced the Security and Freedom through Encryption (Safe) Act. It would ban government-mandated key recovery as a requirement for the domestic use and sale of encryption and would relax controls on the export of encryption products if they're commercially available outside the U.S.

Congress rejected the Safe Act last year. But although the bill, largely unchanged from last year, now enjoys broader support in Congress, President Clinton says he would veto it in its current form.

In April, Sen. Patrick Leahy (D-Vt.) introduced a bill that would guarantee users' rights to use any kind of encryption domestically, and Sen. John McCain (R-Ariz.) introduced a bill that would allow the export of encryption with up to 64-bit keys immediately and up to 128 bits by 2002.

Last month, a divided federal appeals court in San Francisco ruled that the government's ban of a university professor's "export" of encryption software via the Internet violated free-speech protections. The case is likely to go to the Supreme Court.

Consumer Privacy

Industry's mantra on privacy issues is: "Just say *no* to regulation."

"The Federal Trade Commission has the power it needs to address privacy problems," says Stephanie Stitzer, senior manager for science and technology policy at the American Electronics Association in Washington. Stringent privacy regulations for the Internet would put a big crimp in e-commerce, she says.

Last year, 13 high-technology trade associations drafted a plan for industry self-regulation on privacy. It included a set of principles on such matters as accuracy, recourse, security, disclosure and enforcement, as well as an action plan by the online community.

And the Online Privacy Alliance, a cross-industry coalition, last year released a plan for objective third parties such as the Better Business Bureau to evaluate and monitor Web sites for privacy protection.

But none of this has satisfied Congress, where a dozen privacy-related bills are pending. For example, the Senate's Online Privacy Protection Act would require Web sites to tell users what personal informa-

Eye on Wash

hington

STEPHEN SHEFFIELD

Making a Difference

Here are three people who have Washington's ear on three major technology issues:

INTERNET TAXATION: Gene Gavin
Tax commissioner,
State of Connecticut

Gavin recently dressed as a cowboy for an advertisement promising to "round up" tax cheaters. He's going after people who fail to pay taxes on goods bought over the Internet or via mail-order catalogs.

Gavin complains of recent press reports portraying Connecticut as a "notoriously cyber-tax state," but he insists he's not trying to come up with new ways of wringing taxes out of consumers.

He worked closely with Congress to shape the Internet Tax Freedom Act of 1998 and, he says, "We are going to continue to be a voice" in Washington.

ANTITRUST: William Kovacic
Law professor, George Washington University Law School, Washington

"The high-tech industry puts pressure at the weakest joints of the antitrust system," says the antitrust expert. Because the competitive landscape changes so fast, it's very hard for judges and regulators to determine the relative strengths of competitors and their products, he says.

The influential Kovacic, a former lawyer at the FTC, has advised the FTC in its efforts to develop guidelines for what's acceptable behavior in joint ventures. That's now the most important antitrust policy initiative in Washington, he says. The guidelines, to be released by the end of the year, will give high-tech companies more assurance about when and how they can cooperate with other companies, he says.

ENCRYPTION: Whitfield Diffie
Distinguished engineer,
Sun Microsystems Inc.

Diffie, who co-developed the principles behind public-key cryptography in 1975, is credible and outspoken on the social and political issues swirling around cryptography. Perhaps no one has argued more forcefully in favor of a user's right to use strong encryption and against the government's key-recovery ideas. *Computerworld* recently interviewed him. Why should users care about these issues? Security must be supplied by cryptography, if it's to be supplied at all. The stake for users of networked information systems is whether they will have privacy. Who's winning on these issues? The changes in U.S. export rules, although far from what's needed, bring exportable products to the lower end of what could reasonably be called secure. The most important development in recent years, and one that vastly transcends cryptography in importance, is the open-source movement. This promises a dramatic reduction in controllability of software of all sorts.

tion is being collected and how it is to be used, obtain consent from users and offer them access to their own data.

A year ago, an FTC report to Congress stated that despite such efforts, 92% of surveyed sites were collecting personal information, but only 14% were disclosing what they were doing with it. A follow-up study completed last month found that 66% of surveyed sites posted privacy policies, but only 9.5% met FTC guidelines. FTC Chairman Robert Pitofsky hailed this apparent progress but says the agency will "look beyond these raw numbers" and send recommendations to Congress.

Year 2000 Liability

Last year, a business coalition persuaded Congress to shield from liability companies that made statements about their year 2000 readiness. This year, it came back with a more controversial idea: Limit the right to sue a company for Y2K disasters.

A Senate bill would tighten standards of liability proof and impose a 90-day grace period for a sued company to fix its Y2K problems. The coalition, led by the National Association of Manufacturers and the U.S. Chamber of Commerce, argues that the bill would help companies prepare for Y2K by encouraging them to freely exchange information and allowing them to devote resources to remediation instead of legal actions and reactions.

Meanwhile the House has approved its own Y2K bill, which caps punitive damages and imposes a 90-day wait before filing suit. The president has threatened to veto either bill.

Leahy speaks for many Democrats in calling the bills a "wish list for special interests." The Clinton administration, prodded by trial lawyers and consumer groups, says the laws would do nothing to enhance companies' readiness.

And Leon Kappelman, chairman of the Society for Information Management's Year 2000 Working Group, says the bills would remove some of the incentive for companies to aggressively prepare for the date change. "This is a selfish and shortsighted position because it will not fix a single line of code, repair a single embedded chip or improve any contingency plans," he says.

While industry as a whole is behind the bills, individual IT managers are split. At a recent congressional hearing, Lisa Bender, an IT manager at Falcon Plastics Inc. in Brookings, S.D., testified in favor of the Senate bill, saying fear of litigation impedes the exchange of Y2K information.

But IT managers at several medical clinics used a class-action lawsuit against a Florida software company that wanted to charge them for fixes to medical office software that wouldn't work past 1999. The company settled by providing clinics with free upgrades.

Antitrust

Despite a lot of sound and fury, Washington's antitrust enforcement actions against the high-tech industry have, so far, been largely ineffective.

The government's 13-year antitrust battle against IBM ended in 1982 when the Justice Department dropped the case. The FTC recently settled a case against Intel Corp. on narrow issues that the company could evidently live with: access to its technical information by manufacturers.

But then there's Microsoft Corp.

"Microsoft will tell the tale of whether antitrust theory will intervene in the high-tech industry," says Hillard Sterling, an attorney at Gordon & Glickson PC in Chicago.

The ultimate impact of this case will be in the rules it sets for competition, antitrust experts say.

"Whether the government wins or Microsoft wins, the decisions that the case generates — especially if it goes to the Supreme Court — will provide new guidelines for how to behave," says William Kovacic, a law professor at George Washington University in Washington.

The case could have a dramatic impact on IT departments. If Microsoft loses, remedies may be imposed that could open up the Windows source code, break up the company or encourage computer vendors to offer alternative operating systems. If Microsoft wins, it could emerge stronger and less afraid of antitrust actions targeting its software-bundling strategy.

Microsoft's defense is predicated on the belief that the high-tech industry is different from the steel, oil and tobacco industries — other targets of antitrust action. No one company could have competed against the Standard Oil monopoly (which was split up after a 1911 antitrust decision), but Microsoft's competitors raise capital with ease and assemble megadeals, Sterling says. Microsoft has tried to show that the $10 billion merger of America Online Inc. and Netscape Communications Corp. offered proof of competition.

"Microsoft's competitors are only limited by their imagination and their ability to build a better mouse trap," Sterling says.

But James Brock, an economics professor at Miami University in Miami, Ohio, says Microsoft is engaging in the same kind of abusive power that the monopolies of old practiced.

Microsoft's decision to bundle its Internet browser with its operating system is a case in point. "What Microsoft is apparently trying to do is make sure it controls all those other potential applications," Brock says. If no settlement is reached, a court verdict isn't expected until the end of the year. Appeals could keep the case alive for years.

Internet Taxation

The Internet Tax Freedom Act, signed into law last October, is halting efforts to apply new taxes on Net-based transactions through 2001. But it hasn't quelled the debate or the risk to businesses.

State and local officials say they can't afford to let the Internet develop into a tax-free shopping zone. "The sales tax should be a fixed cost whether you are an Internet seller or a Main Street business," says Gene Gavin, Connecticut's tax commissioner. "Otherwise, the Main Street businesses in states that have sales taxes will dry up."

But businesses say taxes can hurt e-commerce. Eben Miller, president of Collegestudent.com Inc. in Austin, Texas, knows firsthand how that can happen. Texas authorities last year tried to collect taxes from the company on advertising it ran on Web sites serving Louisiana. The company creates online communities at college campuses. Texas officials claimed that because the servers were based in Texas, the advertising was taxable, Miller says.

The Tax Freedom Act ended that threat, but Miller says it remains "very difficult to plan for the future."

Once the law expires, any company that does business on the Net may face tax uncertainties. For instance, if a state were to decide that a server located in its jurisdiction is no different from a physical store, it could claim that all purchases made from it are subject to a sales tax, experts say.

Congress last year established a 19-member Internet tax advisory commission to untangle this issue and make a recommendation before the moratorium expires. A key issue: sales tax collection. Many state and local officials want businesses to collect sales taxes regardless of where the goods are sold. Businesses say meeting such a requirement — in thousands of tax districts — could be burdensome. Complying with various tax regulations involves not only collecting taxes, but dealing with potential audits from local tax jurisdictions and filling out hundreds, if not thousands, of forms.

Until these issues are resolved, businesses may want to consider locating servers in tax-friendly states and building e-commerce systems capable of multistate tax collections. Because even if they aren't required to collect those taxes today, companies may save money if their systems are prepared to deal with any future changes in tax laws, advises Richard Prem, a tax expert at Deloitte & Touche LLP in San Francisco.

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IT & The Feds: The Workforce

Look, Don't Touch

While many employees would like the government to better promote best practices for IT hiring, retention and training, few want the government to play an active role in shaping any of them By Deborah Radcliff

THE U.S. opens its doors to let in an extra 50,000 foreign informatioo technology workers — while the domestic labor pool stays underdeveloped. What's wrong with that picture? "We see a shortage of IT workers and think we'll meet our needs by importing foreign workers. But we don't bite the bullet to make the changes we need to make bere in the U.S.," says Kelly Carnes, deputy assistant secretary at the U.S. Commerce Department.

"It would be a tragedy if we reserve all of the best-paying, challenging-growth jobs [for] non-Americans," she says.

Carnes is referring to the Emergency Supplemental Appropriations Act, which last year nearly doubled the quota of H-1B visas granted to temporary IT workers arriving from foreign countries.

But rather than having our government allowing more foreign workers to fill U.S. technology jobs, many say that government and private industry should instead be focusing oo developing a deeper

STEPHEN SHEFFIELD

domestic labor pool by offering training tax credits and revamping the education system.

If you believe the oumbers, more than 1 million new IT jobs will be filled between 1994 and 2005, according to the U.S. Bureau of Labor Statistics.

A Temporary Salve

Thus far, government involvement in the IT labor-shortage problem has been limited to raising the number of foreigners granted H-1B visas from 65,000 to 115,000 this year and next. But we're already close to reaching that cap for 1999. According to the U.S. Immigration and Naturalization Service, 103,753 H-1B visa applications had been approved by the end of April. And there are rumors that stressed-out businesses may soon lobby for more.

But instead of importing more foreign workers, government and businesses should focus their attention on the U.S. education system and employee training, Carnes and others say.

"We understand that businesses need to get people quickly. But at the same time, there needs to he some safeguard for U.S. workers," says Vin O'Neill, a policy analyst at the Washington-based Institute of Electrical and Electronics Engineers (IEEE).

Carnes argues that the government shouldn't be called upon to solve the labor-shortage problem because it's a private-industry issue. Many IT managers agree.

Talent Search

"Like most people hiring in technology jobs, finding qualified applicants amid such competition is [difficult]," says Marc Tower, director of research and developmeot at Lyon, France-based Esker SA, a purveyor of business-host Web access and fax servers.

But the problem for most IT managers is that they're underinformed, experts say. Their days are too crammed with the business of technology for them to address the IT labor shortage on the national scale it deserves.

Unless they're a large IT shop or an influential technology vendor, most employers don't have anyone to push the issue on Capitol Hill, says Matt Gillman, director of network and distributed systems at Blue Cross/Blue Shield in Washington.

"Our issues, in terms of government policy, are all about the health care industry. We're spending our time and energy just doing our work," he says.

Instead of lobbying the government for workforce assistance, Blue Cross is handling the skills shortage internally through a strong, tuition reimbursement program of its own design. More companies should follow that lead, experts say.

Continuous training is among the top three retention incentives IT workers seek, according to a *Computerworld* Job Satisfaction Survey of 511 IT professionals (*www.computerworld.com/home/features.nsf/all/990419charts*). If companies adopted employee life-cycle training programs, the problem just might resolve itself without government intervention, Carnes suggests.

Unfortunately, most small to midsize companies lack the money for such training. And when a company does buff up an employee's skills, it risks losing that newly trained worker to a higher-paying job elsewhere, Tower says.

Government's Role

That's where government can help. In fact, a new tax bill is in the works that would reimburse companies for training their technical workers.

Sea. Kent Conrad (D-N.D.)' introduced a bill in February that would create tax credits to reimburse businesses for up to $6,000 in training expenses per IT worker per year. According to a spokesperson at the senator's office, the Conrad Bill will he attached to the next tax package that goes through Congress. No date has yet been set.

Tower says his company would welcome such a tax incentive; Gillman says the $6,000 figure is reflective of annual per-employee training costs.

A number of industry groups have also been pushing for help recruiting and training underutilized employees such as women, minorities and older workers. In fact, they'd like to see that tax incentive used to train such groups. The IEEE's O'Neill is among those who contend that older engineers and scientists are heing forced into early retirement by younger, lower-paid workers.

The IEEE is lobbying in extend Section 127 income tax exclusion for employers providing educational assistance. It sees tax breaks like the 127 exclusion, combined with Conrad's legislation, as ways to help companies retool older workers.

Such assistance could have helped 50-year-old Robert Tufty, a mathematical engineer in Rockville, Md., who was making $65,000 per year doing C++ and Visual Basic programming until he was "downsized four years ago by a twentysomething," he says. Tufty has since started his own technology development business.

> We see a shortage of IT workers and think we'll meet our needs by importing foreign workers. But we don't bite the bullet to make the changes we need to make here in the U.S.
>
> KELLY CARNES, DEPUTY ASSISTANT SECRETARY, U.S. COMMERCE REPARTMENT

Carolyn Leighton, director at Los Angeles-based Womeo in Technology International (WITI), says her organization would like to see companies use tax incentives to train more women and minorities.

It's Elementary

Another area that government can and should work on is public education, Carnes says — especially now that U.S. high-schoolers rank 18th in the world in math and science.

"When we have an education system that stacks up poorly in math and science even [compared with] developing countries, we have a fundamental problem," says Harris Miller, president of tbe Ioformation Technology Association of America (ITAA).

The ITAA, along with the National Alliance of Business and Education Development Center, sponsors the Techforce Initiative. Techforce is a two-year, national project aimed at expanding IT business involvement in school-to-work partnerships. Other industry groups are also getting more involved with U.S. public and private elemeotary and high schools.

Hands Off

Of course, Washington is experiencing its own IT labor shortage. For that and other reasons, IT managers and private-sector groups say they don't want Washington dictating solutions to their problems.

"Frankly, government intervention scares me," says Esker's Tower, who frequently speaks to IT classes at a local college. "Right now, we're in a cycle where it's a sellers' market for IT workers. At some point, it will cycle back."

Carnes agrees. She contends that government involvement should he limited to publicizing the issues, opening dialogues, revealing best practices and removing roadblocks such as poor legislation.

In fact, Carnes has spent the last year talking to IT managers to flush out labor-shortage problems and best-practice solutions. One answer she's found particularly helpful is the idea of collaborative "skills alliances," in which small businesses work together to grow a pool of qualified workers.

"We could use a piece of bipartisan legislation [that] would provide federal seed funding to help support creation of these kinds of skills alliances," she adds.

Next mooth, Carnes will issue a compilation of the results of those meetings. In the meantime, she's posted some best-practices results on the Web (*www.ta.doc.gov/go4it*). The ideas were harvested from companies that participated in so-called town meetings.

It's obvious that there are no simple solutions to the IT labor shortage. But America's position in the global economy depends on how quickly it builds up its domestic army of technology workers, Carnes warns.

"Businesses had better pay attention to these issues. Look at India: They have an English-speaking, middle-class population two times our entire population — and they're graduating twice as many scientists, engineers and technologists as we are. [The U.S.] already probably is losing competitive ground," she says. ◗

Radcliff is a freelance writer in Northern California.

What Makes IT Stars SHINE?

Putting in long hours may not make a top performer. But being focused, organized and able to see the big picture will By Deborah Radcliff

DON STOLLER keeps Owens & Minor's data warehousing project on track by refusing to interrupt its progress by yielding to each user request

RESOURCE-SWALLOWING projects like data warehouses can strike fear in the hearts of even the most seasoned project managers. But not Don Stoller, director of decision-support services at Owens & Minor Inc., a $3 billion hospital supply distributor in Glenn Allen, Va.

Instead of bogging down, as many data warehousing projects do, Stoller's decision-support system project is so successful that he and his team have picked up two national awards. What's more, his project has been extended beyond Owens & Minor's 500 sales and marketing people to support 4,000 suppliers and 1,400 customers.

All that, and Stoller rarely puts in more than 50 hours a week.

That doesn't surprise Robert E. Kelley, a professor at Carnegie Mellon University in Pittsburgh and the author of *How to Be a Star at Work* (Times Books, New York; 336 pages; $12; paperback).

"One of the things we found when we researched the book is that star performers actually work less time than average performers," Kelley says. "The reason is that star performers have a very strong orientation toward critical tasks and the bottom line. What they don't do is get distracted by stuff that's not tied to the critical path."

Kelley's book examines the work habits of 650 high performers and 650 average performers. Contrary to popular belief, he says, star performers don't have higher IQs, better social skills or more drive than average workers. But they do possess a common set of nine "killer" work habits — everything from taking the initiative to organizational savvy and self-management.

Foremost among those skills is the ability to stay focused.

As Owens & Minor's decision-support system project progresses, Stoller's team of 12 constantly faces distractions such as user requests — "Can we get deeper analysis of our contract data? Can you add this field?"— to enhance its capability. Stoller manages "scope creep" by rolling out new functionality in three- to five-month increments instead of making changes every time a user calls with a good idea.

"We don't tackle everything at once. We carve the project into certain deliverables so we can start getting benefits in a shorter period of time," he says. "We tell customers we cannot include certain pieces until a later phase because it could lengthen the deliverable by two or three months."

But staying focused doesn't mean working with tunnel vision. Kelley says star performers have very broad perspectives that they acquire by listening to others' viewpoints and staying alert to trends in their industry. Stars are also good at using past experience to carve time off their current projects, something Kelley calls "pattern recognition."

Mike Petosa uses all those tactics.

"I rely heavily upon recognizing patterns during the project life cycle and predicting the next few steps in the process to help me save time and to work efficiently," explains Petosa, chief technology officer at job-placement firm Pencom Systems Inc. in New York. For example, Petosa draws on his project experiences to determine the scope of a new project. Then he compares that to his staff's knowledge base to decide if needs some extra help.

Petosa also tunes in to company and industry trends to align his projects with his company's business purpose. By understanding those internal and external forces, he doesn't waste time bidding out projects that "don't stand a chance of being approved," he says.

According to Kelley, stars also develop strong "knowledge networks" — people and resources who can get them an answer when they need it. Other star work habits include teamwork, leadership, "followership," organizational savvy and the ability to present information to an audience in a way that brings them along on the project, he says.

Another key to success is being able to answer the question, Why are we doing this? says Noah St. John, author of *Prepare to Win* (*www.successclinic.com*). "There must be buy-in at all levels," he says. "Ten percent of what we do as humans is based on 'hows'; 90% is based on 'whys.' " Once people buy in to why they're doing something, he says, the more likely they are to allow themselves to succeed.

Radcliff is a freelance writer in Northern California.

Getting It Together

Staying focused is one of the most fundamental work habits of a star performer, according to Robert E. Kelley, a professor at Carnegie Mellon University in Pittsburgh and author of *How to Be a Star at Work*.

PG&E CIO Debra Domeyer

Debra Domeyer uses many methods to avoid distracting e-mail and phone calls and unnecessary paperwork. As CIO at PG&E Energy Services in San Francisco, her priorities are to estimate technical support for contract bids going out to her company's business customers while overseeing the building and maintenance of internal systems.

With paperwork and e-mail, Domeyer follows what she calls her "touch it twice" system. "If it's not important, throw it in the trash. If it is, respond. I learned this years ago," she explains.

She also uses the age-old methodology of making daily priority lists, crossing off completed tasks (which gives her a sense of accomplishment) and adding uncompleted tasks to the next day's list.

Domeyer has also built an infrastructure of people and technology to help her prioritize and delegate. Her assistant forwards about 20 vendor calls daily to another person in the IT organization. "Nothing beats having good staff" to delegate work to, she says.

She also relies on technology like prioritized e-mail pages and ticklers to alert her to project deadlines. Having a mobile office is important because she commutes from her home in Los Angeles to her job in San Francisco, using the commuting time to catch up on e-mail, review documents and think about the week ahead.

Domeyer sometimes uses her Monday morning flight to do something really important: meditate. "I take 15 or 20 minutes to think directionally about my organization," she says. – *Deborah Radcliff*

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Fast-track IT grads

Two-year degree programs are putting more entry-level professionals and career changers into the IT workforce. Here's a look at some typical students and the value of their diplomas

By Alice LaPlante

SHARON BARNES landed a job at EDS after earning a two-year degree in business computer programming

WILL HERMES

A Practical Education

WHEN THE MORTGAGE company at which she'd worked for more than a decade closed its doors, Sharon Barnes had to make a decision. Should she attempt to get a new job in her field (she'd been a divisional manager in a 40-person department handling delinquent accounts) or try something new? After checking out the possibilities and realizing they looked bleak, Barnes decided to go back to school and embark upon a new career in information technology.

"Opportunities for someone with my experience were very limited," Barnes recalls. After doing sufficient research, she found that a starting IT salary would pay as much as she'd earned as a veteran manager in her field. She promptly enrolled in Guilford Technology Community College in Jamestown, N.C., and began taking IT classes.

Barnes graduated in January 1997 with an associate's degree in business computer programming and was snapped up by Electronic Data Systems Corp. in Raleigh, N.C., which was looking for IT candidates. In fact, EDS had recently created a special training program specifically designed to fill gaps in its IT staffing: candidates needed to possess an associate's degree and were put through a five-week course before joining the year 2000 team at EDS.

At Guilford, Barnes took classes in Cobol, RPG, C++, FoxPro and relational database programming. "It was very hands-on," she says. In retrospect, she says she believes that really worked to her advantage. "When I got to EDS, I had to learn JCL and some specific mainframe skills." Her college training was all on the AS/400, but Barnes says she "had enough grounding in specific things to feel comfortable."

Her long-term plans are to continue her education and eventually earn a four-year degree in business management because she says she'll have more opportunities that way. But Barnes is a big proponent of two-year programs.

"You can always continue with your education later," Barnes points out. "But if you have a two-year technical degree, you can get out into the job market quickly and begin working. It's very practical."

A Second Career

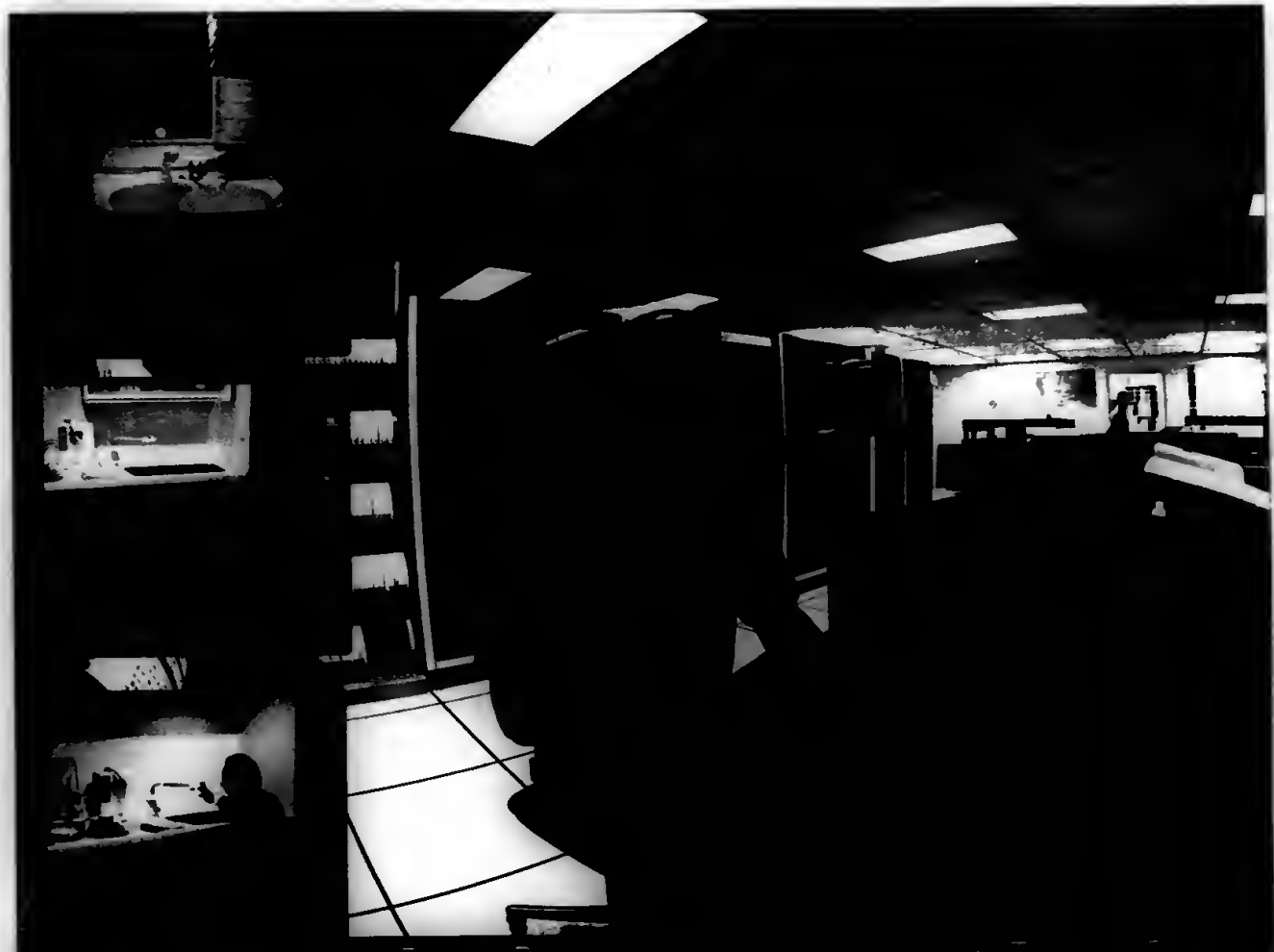
After being laid off from his job as an aircraft machinist at The Boeing Co. in December 1993, Dan Thompson began to rethink his career options.

"I'd had recommendations from friends and family to get into the programming area," Thompson says. "I'd never tried it, but when I took a class, it happened to click." Thompson enrolled in the two-year program in computer programming at Bellevue Community College in Bellevue, Wash., and within 18 months had earned his associate's degree. Two days after graduation, he had a job.

Why did he choose Bellevue's two-year program over other education options? "[Bellevue] has an excellent reputation. I knew a degree from there would be very practical," Thompson says.

He also had financial considerations that made it a logical choice: As part of Thompson's severance package, Boeing had agreed to pay for a certain

Fast-track IT grads, page 63



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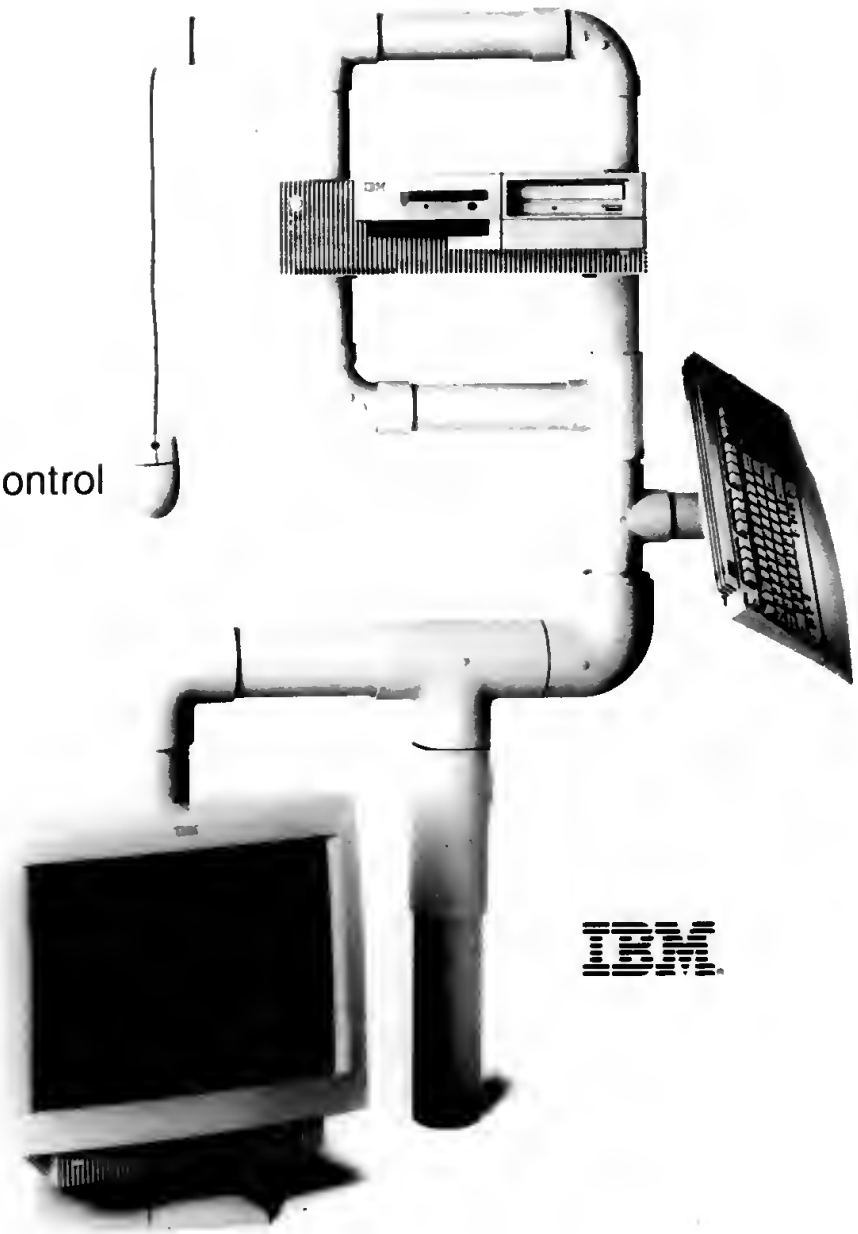

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Fast-track IT grads

Continued from page 60

amount of retraining and "earning a two-year degree was a practical way of taking advantage of this and getting back quickly into the job market," Thompson says. He took double the number of programming classes required, deciding to get certified in both Visual Basic and C++ technologies (most students choose just one). "I wanted to get as much of a skills base as possible," Thompson says.

How easy was getting a job? The school sent out Thompson's résumé just prior to graduation. "I was hired two days after my last class," he says. He spent eight months at his first job as a Visual Basic programmer before accepting a job at his current employer, System 1 Software Inc. in Fremont, Wash. There, he's the lead software engineer porting a leasing program from the mainframe to the Web.

His future plans? "I would like to go back and get the four-year degree," Thompson says. "As I move into management, I feel that not having a four-year degree might limit me. And part of it is personal. A college degree is a nice thing to have. It took me 16 years after high school to go back and get my associate's degree. I may as well go the whole way."

Opportunities, Opportunities

Keisha Powell hasn't even finished her two-year associate's degree (she graduates next month), but she's already lined up a job as a computer technician at Hammer Technologies in Wilmington, Mass., earning a salary of $40,000.

"The career opportunities are great," she says of her decision to study computer science at Springfield Technical Community College in Massachusetts. She began to take classes in chemical engineering immediately after graduating from high school, but she disliked the coursework.

A friend recommended a networking class, and she was hooked. She took classes in C++, assembly languages, Visual Basic and computer operations and found that the specific things she'd been taught helped enormously in job interviews.

"When I went for the interview at Hammer, they were very interested in hearing that I had [training in] both Visual Basic and C++, since the programming I'd be doing there involve both languages," Powell says.

POWELL

Like the others mentioned here, Powell doesn't plan to stop with her associate's degree.

One of the reasons she chose Hammer was that the firm will pay for her continuing education. Although she says she will stay within the IT profession, "I don't have to be a computer technician the rest of my life. I'd like to go into management, which means getting my four-year degree or even more. The nice thing is that I will be learning what I like on this job and planning my future with the help of my company."

LaPlante is a freelance writer in Woodside, Calif.

Two-Year Degrees Fill An Urgent Need

EVANS

Neil Evans is the executive director of the NorthWest Center for Emerging Technologies, an information technology educational institute on the campus of Bellevue Community College. Evans was CIO at Microsoft Corp. from 1983 to 1994.

CW: What purpose do two-year programs like yours serve?

EVANS: A two-year program like ours basically graduates technicians, whereas a university creates engineers. Engineers create the technology; technicians use it. That's the primary distinction I make.

Our mission is to get people on the fast track to working in IT. Our students are more quickly and immediately employable. We're very focused on what will be of use now.

In addition to the classes they take, all students are required to do an internship here on campus — helping run our help desk, for example — as well as perform an "externship," where they work at a local company. They get a lot of hands-on experience. We have a competency-based curriculum, in that students have specific things they can do after taking a specific class.

CW: What sort of students does a two-year program attract?

EVANS: A third of our students are young, just out of high school, between the ages of 19 and 23. But a full two-thirds of our students are older. Most of them are back at school in order to begin a second career [or] upgrade their skills. Most have the goal of getting a better job, making more money. We call this "recareering," and a substantial number of our students fall into this category.

Another difference between our students and those attending a four-year university is that they tend to have other responsibilities: families, jobs. Money is an issue for most of them. They need to continue working while they are in school and to get jobs in their new field as soon as possible.

CW: How do you make sure you're in touch with the needs of IT employers?

EVANS: We have a national advisory board with representation from the top global companies in IT. Gartner Institute [the educational arm of Gartner Group Inc.], Lucent Technologies [Inc.], Bell Atlantic [Corp.] and, of course, Microsoft.

In addition, we have local boards made up of local businesses that provide direction to each of the department chairs. Their job is to tell us what will be needed skill-wise, early on.

Today, our local board members are telling us we need to train people in e-commerce, so we're in the process of creating an e-commerce program track. The life cycles of creating a new class, based on input from our board, is about six months.

CW: Are there any disadvantages to choosing a two-year program over a four-year program?

EVANS: One of the criticisms of community colleges is that they focus too much on the technical and not enough on softer skills. I'd say a valid criticism of programs like ours is that our students are not as well-rounded. They don't fulfill any general education requirements; they don't take philosophy and literature.

At some point, this can keep them from advancing in their careers. Don't get me wrong — someone with a two-year degree in a technical field can work their way up to senior technologist or supervisor, but they will probably not become a manager or a system architect unless they go back to school.

Searching for Knowledge, Not C++

Gordon Cormack is a professor in the computer science department at the University of Waterloo in Waterloo, Ontario.

CW: What's the difference between two-year programs and a program like yours?

CORMACK: They really fulfill different needs. The shorter, two-year programs are more for specific training in the use of tools or in specific tasks that need to be done today.

University programs tend to be more in-depth investigations of underlying technologies. Rather than just getting what you need on the job today, you are being exposed to an intelligent environment in which knowledge is created and sought after. We tend to look toward what will be important tomorrow.

CW: What sort of students do you attract?

CORMACK: Most of our students come to us straight out of high school. They are the best and the brightest; they've worked hard, earned good grades; they tend to be interested in science or mathematics. Many of them will continue with their education after earning their undergraduate degrees. Graduates who do not pursue an academic career are hired by the biggest names in the computer business: IBM, Microsoft, Nortel [Networks], [Electronic Data Systems Corp.], Andersen Consulting and so on.

CORMACK

A significant number go into start-ups in Silicon Valley or into IT positions at major corporations throughout North America.

CW: How do you respond to criticisms that university IT graduates don't have enough hands-on experience?

CORMACK: Putting our students through internships was a founding tenet of our university. Part of our mandate was that some engineering educations involved teaching too much irrelevant stuff.

The University of Waterloo was a pioneer in creating its "co-operative education" program. From the very beginning, students were encouraged to join a co-op program in which they alternated four months of academic education with four months of internship in a technology job. Our graduates are highly valued because of their combination of theoretical knowledge and practical experience.

— Alice LaPlante

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Statement of Income

BY THOMAS HOFFMAN

WHY SHOULD CIOs, network managers or even database programmers be able to understand a company's statement of income?

Two reasons: To analyze their own company and figure out how their information technology department can contribute to it. And to be able to determine whether a vendor or potential merger partner is a good bet.

"It's important for anyone in the technology arena to be able to read and comprehend an income statement because profitability runs corporations. And if a company is not profitable for a certain period of time, it cannot stay in business," says Alan D. Kahn, president of The AJK Financial Group, a Syosset, N.Y.-based financial planning and accounting firm.

DEFINITION

A statement of income shows a company's basic financial information over a period of time, such as a quarter or a year. It includes revenue, expenses, gains, losses, and net income or loss. Information presented in an income statement is considered vital because the profitability of a company is an important measure of its financial health and direction.

When a CIO sits down with a chief financial officer or controller to lobby for technology investments, "they need to be able to quantify the impact" that IT investments and technology projects are having on the bottom line, Kahn says.

Barometer Reading

Reading a statement of income is a lot like looking at a barometer to get a weather forecast. These reports can help IT professionals determine if the vendors they're thinking about purchasing equipment from are in the center of a financial storm, such as decreasing revenue, or are caught up in an industrywide tsunami.

Also, with so much merger-and-acquisition activity taking place in technology and other industries, understanding a company's income statement can help IT professionals "determine the potential strength or weakness of a suitor or acquiree," says Chris Loiacono, a tax partner at Richard A. Eisner & Co. LLP, an accounting and consulting firm in New York.

IT managers who have responsibility for profit and loss (also known as P&L) should also be able to understand one of these reports because a financial misstep could come back to haunt them.

For example, if the average manufacturer of air conditioners delivers 12% gross profit and the air-conditioner maker you work at is delivering only 8%, Loiacono says, IT and business executives should know about it. In that case, technology could be used to increase the profit margin.

One thing to keep in mind, though: Privately owned companies like e-commerce startups typically don't publish these reports, according to Susan Koski-Grafer, vice president of technical activities at the Financial Executives Institute, a Morristown, N.J.-based association for CFOs and financial executives.

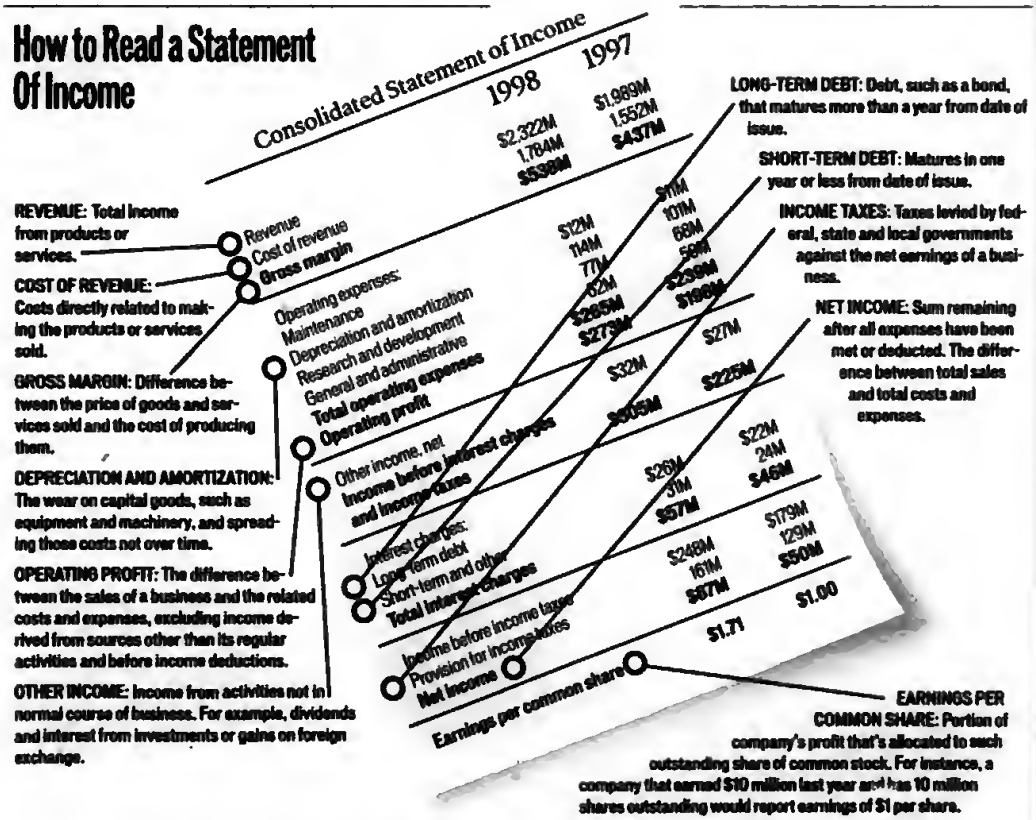
Run a Credit Rating

But there's a way around that roadblock if you need to evaluate the financial health of a vendor or potential partner. You can pay an information services vendor like The Dun & Bradstreet Corp. to run a credit rating on a company or find the profitability trends within a subsector of that industry, says Dewey Norton, vice president of finance at The Ricon Group, a Panorama City, Calif.-based maker of wheelchair ramps and other accessories.

"You have to look at a comparative statement [of income] over two or more years to know something about what's happening in a given industry," Norton says. "Is a company losing market share because everyone's sales are down in that industry, or have they lost their technological edge?"

Are there business terms you would like to learn about in QuickStudy? Please send your ideas to QuickStudy editor Stefanie McCann at stefanie_mccann@computerworld.com.

How to Read a Statement Of Income



REVENUE: Total income from products or services.

COST OF REVENUE: Costs directly related to making the products or services sold.

GROSS MARGIN: Difference between the price of goods and services sold and the cost of producing them.

DEPRECIATION AND AMORTIZATION: The wear on capital goods, such as equipment and machinery, and spreading those costs out over time.

OPERATING PROFIT: The difference between the sales of a business and the related costs and expenses, excluding income derived from sources other than its regular activities and before income deductions.

OTHER INCOME: Income from activities not in normal course of business. For example, dividends and interest from investments or gains on foreign exchange.

LONG-TERM DEBT: Debt, such as a bond, that matures more than a year from date of issue.

SHORT-TERM DEBT: Matures in one year or less from date of issue.

INCOME TAXES: Taxes levied by federal, state and local governments against the net earnings of a business.

NET INCOME: Sum remaining after all expenses have been met or deducted. The difference between total sales and total costs and expenses.

EARNINGS PER COMMON SHARE: Portion of company's profit that's allocated to each outstanding share of common stock. For instance, a company that earned $10 million last year and has 10 million shares outstanding would report earnings of $1 per share.

MORE ONLINE

For more information about statements of income, visit our Web site.
www.computerworld.com/more

Dear Career Adviser:

I'm currently located in Houston and want to move to the San Francisco area to get into one of those hot Internet companies. I have two years of experience in programming and support with assembly and C.

I'm taking classes in Unix and C++, and getting some Web design skills under my belt. First, I want to know about technical conferences and job fairs that take place in the Bay area, and I also want to connect with some of those Internet companies I hear so much about. — HEADING WEST

Dear West:

Whoa, cowboy. Internet stocks have taken a bath of late, so be careful if you're thinking of making a fortune on just one hot start-up. If you're still bent on moving to San Francisco or Silicon Valley, which is about 40 miles south of San Francisco, go to *www.jobsmart.org* and then to Craig's List, the brainchild of Craig Newmark and several compatriots.

It's a super resource for Bay area "new media" events, jobs and even places to live. For job fairs, particularly for developer jobs in Silicon Valley, you might check out Kaplan Career Services (*www.kaplancareers.com*), formerly The Lendman Group; and HotJobs.com (*www.hotjobs.com*).

But you won't want to miss WestTech. Find out about it at *www.vjf.com*. For professional conference information, surf over to *www.conferences.calendar.com*; *www.techweb.com/calendar/*; and *www.techexpo.com*.

In an ideal, but exhausting, seven-day visit, you could actually cram in a professional conference, a job fair, a couple of Craig's List parties and several interviews. Providing, of course, that you aren't stuck on the freeway!

Dear Career Adviser:

Like Ms. Hill [CW, May 3], at age 52, I also fall into the "geezer" category. I love systems analysis and developing solutions. And now, with lots of experience in large data processing shops, I'm leaning toward learning more about the Web and getting certified in Java. Am I also "over the hill," or is this an investment I should make in both time and money? When I read comments about older IT workers, I feel gloomy. Thank you. — GEEZER NO. 2

Dear Geezer:

Since I, too, am well on my way to "over the hill" status, "recycling" experienced workers is one of my passions. Learning Java would certainly propel you firmly into Web territory. The question is, What's the best route?

"If you're a C/C++ programmer, learning Java might take only a few months. But if you are coming from a mainframe background, the learning curve could be far steeper. "It depends on aptitude," says John Rommel, cofounder of Future Presence, a San Rafael, Calif.-based Java consulting and recruiting firm.

You can get Java training and certification information via your community college, from Sun Microsystems Inc. (*www.sun.com/java*), other trainers or eveo on the job. Sun Java certification currently costs a discounted $1,000, with additional costs for retesting oo failed parts of the test and additional costs to test to update your certifications.

FRAN QUITTEL is an expert in high-tech careers and recruitment. Send questions to her at www.computerworld.com/career_adviser.

To get a training position, Rommell says, you'll need a C, C++ or object-oriented background. But once you have experience, Java developers in the Bay area, for example, can expect to earn in the high five to six figures for permanent positions and a consulting rate of $60 to $95 per hour.

"Java will continue to grow because of its productivity advantages over C and C++," Rommel predicts.

If you're interested in simply finding out more about the terminology and trends in the Java scene, go to a user group meeting or visit *www.CityJava.org*, which offers excellent related links and transcripts of past meetings with Java heavyweights so that you can speak knowledgeably when you begin interviewing.

Remember: If your technical skills are valid, experience helps deliver solid projects amid frenetic deadlines.

Dear Career Adviser:

I'm thinking of becoming o Certified Novell Engineer (CNE), but the more I talk to people, the more divergent the advice. My goal is to head in a direction that won't fizzle out in the next five to 10 years. I would like to find o position that will be very satisfying both financially and mentally. Please help. — CONSENSUS-DRIVEN

Dear Consensus-Driven:

E-mail certainly came flying my way when I gave "Not Sure About My CNE" advice on Microsoft Systems Certified Engineer (MCSE) status over Novell certification [CW, April 19]. The reason? Hiring managers prize the stiffer coursework and experience required for the Novell certification process over MCSE training, not to mention Novell's resurgence as an enterprise networking vendor.

Therefore, be prepared to spend up to a year studying and getting certified and to understand some of the basics from a multivendor as well as a hands-on perspective. "Don't be just a paper MCSE. Be able to show that you know what a network card looks like and how to replace/add more memory, and that you have a good background in things as basic as good-old DOS," says James C. Chavez, a senior technical instructor at Certified Network Solutions in Salt Lake City, who has Novell and Microsoft certifications.

While community colleges again rate highly as sources of networking training, so do authorized Novell and Microsoft programs. To get experience, start at the bottom and work your way up.

"I advise people with no experience to start off by working as a bench technician at a large computer store such as Fry's Electronics Inc. or CompUSA Inc. and theo to look for field service positions doing hreak/fix work," says Allan Hurst, presideot of Spectrum SupportNet Inc. in Foster City, Calif. "From there, it's a very short leap to applying for a network-oriented position."

In summary, learn Novell and Microsoft to start and then Cisco Systems Inc. applications if you're going to do infrastructure. Then keep upgrading and recertifying your skills in heterogeneous environments every 12 to 18 months. That should keep your career going full steam ahead. ◗

WORKSTYLE BRIEFS

Where the Jobs Are

Number of U.S. high-tech workers
in 1998: 4.8 million
in 1993: About 3.8 million

State employing the most high-tech workers: California
Number: 784,000 (1997)
Growth rate 1990-1997: 9%

Highest growth rate: 172%
Where: South Dakota
Number of jobs: 14,500

Creation of most new jobs: Texas
Amount: 102,000 (1990-1997)
Growth rate: 37%

Other growth leaders: Washington (59%), Georgia (54%), Colorado (43%)

Highest average high-tech wage:
Washington state
State's annual average: $81,000
Nationwide high-tech average: $53,100

Best-paid workers: Prepackaged software sector
Annual average: $80,000

Highest concentration of tech workers: New Hampshire
Percentage of workforce: 8.2%

Source: "Cybernation 3.0: A State-By-State Overview of the High Technology Industry," The American Electronics Association. Washington based on data from the U.S. Bureau of Labor Statistics. High-tech industry is defined as companies involved in manufacturing, communications, services and software and computer-related services.

Top Work Toys

According to David Hemsath and Leslie Yerkes, authors of 301 Ways to Have Fun at Work, *the 10 most popular office toys in order of popularity are:*

1. Koosh balls
2. Nerf guns
3. Nerf balls
4. Silly Putty
5. Frisbees
6. Pez dispensers
7. Slinkys
8. Tinkertoys
9. Yo-yos
10. Pogo sticks or hula hoops

SOURCE: BUSINESS STATE REMARKING EMPLOYEES NEWSLETTER, SAN DIEGO

TECHNOLOGY

AN EASIER ROAD TO WIN 2000?

Microsoft has upgraded the Active Directory Service Interface to make it easier to build new applications or adapt existing ones on Windows 2000. But users fear it'll take more than a tool or two to keep the migration from getting messy. ▸ 68

Q&A: NEW CABLETRON CEO

Piyush Patel, Cabletron's new chief, says the networking vendor will increase its focus on service providers — but won't forget about the enterprise: "It's our stronghold, and we will protect it." ▸ 72

EXEC TECH

Portable video projectors for computer-generated presentations are getting cheaper, lighter and easier to use. We review four examples. ▸ 75

YOU'VE GOT MAIL. LOTS OF MAIL

What if you built a Web site and everyone came? You'd have lots of inbound and outbound e-mail to manage. One company is using a combination e-mail server and app development tool to manage the two-way traffic. ▸ 68

HANDHELDS GET PATIENT DATA

Doctors have long carried their schedules in handheld devices. But now, with the help of new tools, they're porting medical data to handhelds. That eliminates the need to stop by a PC to access crucial patient information. ▸ 70

HACK OF THE MONTH

Watch out for this crafty Linux hack: the "slow port scan," in which the attacker delivers a single packet to a different port every three hours — thus flying beneath intrusion detection tools' radar. ▸ 72

QUICKSTUDY: PCI-X

The PCI-X bus will help speed the flow of data from a CPU to devices like network cards and printers when it ships this year. We explain how it compares with rival bus technologies, current and future. ▸ 77

EMERGING COMPANIES

XACCT Technologies wants to offer a single bill for all network services, data and voice. That would give IT an opportunity to balance quantity and quality of service with price — if it happens. ▸ 74

FLASHBACK

In 1972, a team at Xerox Parc created the Alto, the forerunner of today's PCs. ▸ 81

MORE

Hardware 70
Networks 72
Software 68

NUDGING UP TO WINDOWS 2000

SIX MONTHS AFTER we first spoke with them, three CIOs have at least a bit more interest in Windows NT and Windows 2000. One is keeping his strong commitment to NT; a second says NT is becoming a more valid option to NetWare; and the third is sticking with Unix but says NT still might prove itself.

78

You've Got Mail: Start-Up's Tool Helps Sort It All Out

App development product/e-mail server combo tracks inbound, outbound messages

BY DOMINIQUE DECREMYN

LASER EYE surgery provider TLC Laser Eye Centers Inc. in Toronto has to keep in touch with its 11,000 affiliated doctors, 140,000 former patients and hundreds of thousands of potential customers. Its answer? An e-mail application server.

The software TLC uses is a combination application development tool and e-mail server, which TLC found to be less expensive and faster than other approaches.

TLC sends regular, personalized e-mail to hundreds of thousands of contacts. About 30% of the recipients reply to the e-mail, in which case the customers expect a response from TLC.

"We've got a staffing and a tracking problem" because of the volume of incoming and outgoing e-mail, conceded Anthony Dezilva, product manager for e-commerce services at Vision Corp., the TLC subsidiary that's implementing the company's e-commerce efforts.

Various packages and services address that e-mail deluge. Some, like Brightware Inc.'s namesake software, focus on routing or responding to inbound e-mail; others, such as MarketFirst Software Inc. and Socketware Inc., offer ways to personalize outbound e-mail. Additionally, several service providers can handle some or all aspects of customers' marketing campaigns.

Weak Support

TLC also considered using computer-aided software engineering tools to develop custom e-mail applications, but found that most offer spotty support for e-mail. They would also have required "consultant-level" developers, Dezilva said.

So TLC opted for the newly released E-mail Application Server (EAS) from Richmood Hill, Ontario, start-up Delano Technology Corp. One of the first tools that may help to create a new software category, the product combines a graphical application development tool and an application server for e-mail applications and runs on a Windows NT server. Pricing starts at $5,000.

Such software "is potentially a valuable link between inbound and outbound [e-mail]," said Paul Sonderegger, an analyst at Forrester Research Inc. in Cambridge, Mass.

The first application that Visioo developed with EAS forwards e-mail responses to a corporate rebate offer from TLC's Web site to its sales staff. Another routes customer support e-mail from TLC's affiliated doctors to the appropriate customer representative, attaching information about the user and his previous visits to the Web site.

Using a technology like Microsoft Active Server Pages, some of those applications would have taken up to six months to develop, Dezilva said.

He said he also likes that EAS provides some of the trappings — such as version control, rollback capability and automatic documentation — of a true application development environment.

Although the tool lacks advanced natural-language capability such as the ability to analyze sentences, TLC has found that by spotting keywords and phrases, it generally routes e-mail correctly.

Microsoft Tries to Ease Move to Win 2000

Users, analysts nervous about Microsoft upgrade

BY SHARON GAUDIN

Microsoft Corp. has rolled out an upgraded tool designed to make it easier to build new applications or adapt existing ones to Windows 2000. But corporate users fear it will take more than a tool or two to keep application migration from becoming a messy venture.

Microsoft announced two weeks ago that it was releasing Version 2.5 of its Active Directory Service Interface (ADSI), a group of Component Object Model (COM) objects designed to reroute an application's queries from databases generally used in the Windows NT 4.0 architecture to the Active Directory that will be part of Windows 2000.

The objects, which can be dropped into applications like blocks, will change the old query coding into Lightweight Directory Access Protocol (LDAP) code that will interface with Active Directory.

LDAP is a set of programming rules that lets applications access information inside directories. ADSI is a Windows-specific tool that drops chunks of LDAP code into the application so that developers don't have to write it themselves. Because ADSI will be used with Microsoft's Visual Basic tool, developers will have to know just Visual Basic rather than LDAP.

"It's good that they're taking existing technology like [Visual Basic] and COM and adding on to it for us," said Brian McGuire, a vice president at Econometrics Inc., a Chicago-based data warehouse marketing firm. "But tool or not, it's going to be a lot of work to dig back into the code in all those existing applications.... That's going to be a pain."

"It sounds like a complex strategy to me," agreed Dan Kusnetzky, an analyst at International Data Corp. in Framingham, Mass. "People want simplicity."

Windows 2000, the next version of Microsoft's Windows NT platform, is slated to ship before year's end (Microsoft has confirmed an internal target ship date of early October). But many users have said they won't adopt it until sometime next year.

That will give independent software vendors time to develop and deliver applications that are Active Directory-ready — but corporate developers may not have that luxury.

Users and analysts agreed that once an application is geared toward Windows 2000 with Active Directory coding signposts added, that application will be harder to run on Windows NT 4.0.

Peter Houston, an NT product manager at Microsoft, said an Active Directory-ready application can run on Windows NT Workstation, Windows 95 and 98 if the administrator installs a directory server using Windows 2000 on the back end. But if a shop wants to migrate applications before fully adopting Windows 2000, it will have to use the current release, Beta 3, in production.

That may not be a great idea, according to Kusnetzky.

"Microsoft acts like everyone is going to wholeheartedly abandon what they're using now, rolling Windows 2000 out on all their servers and clients at the same time," he said. "It's going to be hard to work ahead of time because [NT 4.0 and Windows 2000] are two different structures."

JUST THE FACTS

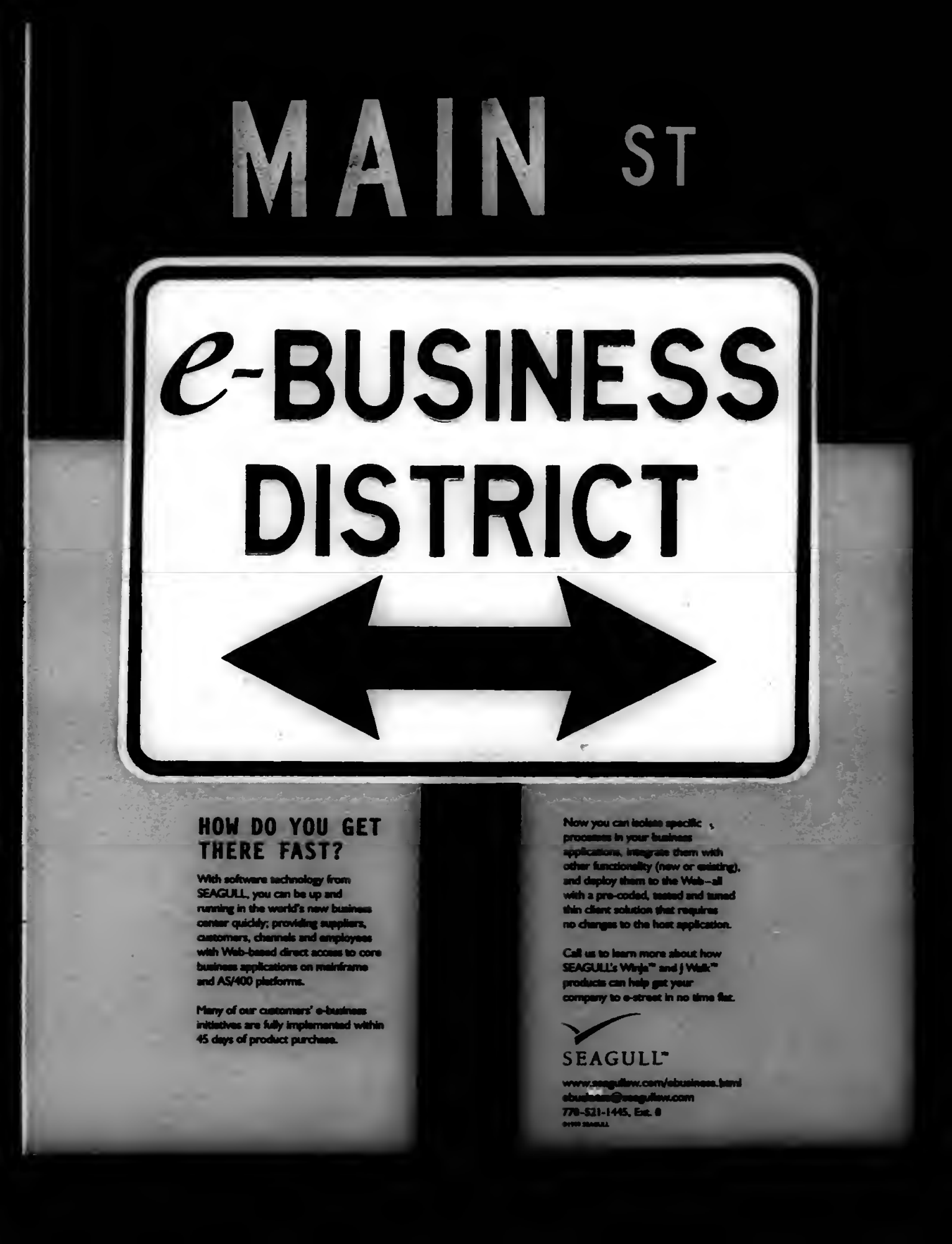
Microsoft's ADSI Tools

What it is: Active Directory Service Interface Version 2.5, a set of Component Object Model (COM) objects

What it does:

- Provides a set of interfaces for directory programming tasks
- Works with Visual Basic and other tools
- The COM objects provide needed Lightweight Directory Access Protocol code without the developer doing any coding other than Visual Basic
- Can be used to create Active Directory-ready applications or upgrade existing applications

SOURCE: MICROSOFT CORP., REDMOND, WASH.



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BRIEFS

Gateway Adds Rack-Mount Server

Gateway has introduced the Gateway ALR 9250R, a rack-mount server that can house up to four 500-MHz Pentium III Xeon processors from Intel Corp., according to the North Sioux City, S.D., company. The server features a 46-byte hard drive and 256M bytes of synchronous dynamic RAM.

Pricing starts at $8,599.

www.gateway.com

Compaq Handheld

Compaq Computer Corp. has announced Aero 8000, a handheld PC that enables secure remote access to corporate data.

The device is powered by a 64-bit, 128-MHz processor and comes with up to 64M bytes of SDRAM, according to the Houston company.

Pricing starts at $849.

www.compaq.com

Low-Priced PC From Future Power

Future Power Inc. has released the Advantage Series PC, a desktop with a 366-MHz Celeron processor from Intel Corp. The PC offers a 4.3G-byte hard drive, 32M bytes of SDRAM, a floppy drive, a CD-ROM drive and a 56K V. 90 modem, according to the Santa Clara, Calif., company.

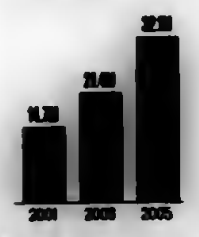
It costs $558.

www.futurepowerusa.com

SNAPSHOT

Net Devices Boom

*Worldwide sales forecast for Internet appliances**



*Devices with embedded internetworking capabilities

SOURCE: COMPUTER ECONOMICS CARLSBAD CALIF.

Doctors Store Patient Records in Handhelds

Data that once was stranded on PCs now travels directly to the bedside

BY MATT HAMBLEN

DOCTORS have been carrying handheld computers for some time to keep their schedules. But with the help of new tools, hospitals and doctors are beginning to port medical data to handheld devices, eliminating the need to access the data through stationary desktop PCs.

In New York state, a gastroenterologist is beta-testing software that lets her carry patient records on a handheld instead of lugging up to 15 manila file folders from her office to the hospital each day.

And in Arizona, several doctors at St. Joseph's Hospital and Medical Center in Phoenix have just begun to use handhelds to help them make complex decisions about whether to admit patients complaining of chest pains that could indicate a heart attack.

"It's absolutely been valuable, since I can pull up the demographics on a patient in the hospital on the handheld and don't have to call my office or go back to pull a chart," said Dr. Julie Torman, the gastroenterologist, in Croton-on-Hudson, N.Y.

One night recently, she was able to admit a patient to the hospital by consulting the patient's records on her handheld database, finding a record of recent medications and a phone number to notify the next-of-kin.

Torman uses a Phenom Express, a ruggedized Windows CE-based handheld from L. G. Electronics USA Inc. in Englewood Cliffs, N.J. It contains an internal 56K bit/sec. modem so she can dial up her office to download patient records. The software is being developed by Sugar Loaf Software Corp. in Sugar Loaf, N.Y., based on the embedded database technology from Pervasive Software Inc. in Austin, Texas, officials from both companies said.

Torman tried another handheld, the Clio by Vadem Inc., but found it didn't respond as quickly as the Phenom Express when she entered notes. Both machines have larger screens than palm-top machines such as the PalmPilot, something Torman feels is necessary when taking medical notes.

In Phoenix, Dr. Philip Fracica, director of the intensive care unit at St. Joseph's, has developed a cardiac evaluation application that uses data from thousands of heart attack victims to look at 15 risk factors and identify at-risk patients.

At the patient's bedside, doctors use PalmPilot Pros by Palm Computing Inc. in Santa Clara, Calif., to answer several questions on a decisioo tree to determine a patient's risk level.

"The process streamlines into a 30-second point-and-elick procedure — something which would otherwise have required hours to do and probably, therefore, wouldn't have been done," Fracica said.

The staff at St. Joseph's loaded the eardiac application on a Web server and used software by AvantGo Inc. in San Mateo, Calif., to port the Web-based information to handhelds that use either the Palm Operating System or Windows CE, Fraciea said. And the data transfer can be done by docking cradle or via a modem.

The advantage of the AvantGo software is that it won't limit other doctors to one type of handheld, Fracica said.

Most doctors at St. Joseph's were already using PalmPilots, so the hospital adapted to that machine. But in the long term, the hospital wants to be able to stay flexible.

DR. JULIE TORMAN uses a ruggedized Windows CE-based Phenom Express handheld from L. G. Electronics to dial up her office to download patient records

IBM, Partners Offer Glimpse Of Speech Tech's Potential

E-commerce, mobile markets targeted

BY NANCY WEIL
CAMBRIDGE, MASS.

IBM's Speech Recognition Research Day, held here last week at IBM subsidiary Lotus Development Corp., saw a handful of vendors showcase speech technology wares.

Though the products covered many possible uses, the mobile market and the Web were heavily emphasized.

Dictaphone Corp., based in Stratford, Conn., demonstrated digital portable recorders that mobile workers can use to record e-mail, calendar data and other information. The recorders can be linked to PCs.

Dictaphone also offers a handheld microphone that can be used to verbally input and edit information on a PC.

PDAs, Pagers, Cell Phones

The mobile and appliance markets are viewed as major drivers of demand for speech technology, with personal digital assistants, pagers and cellular phones seen as key.

The e-commerce market is another driver. Mobile Application Servers Inc., a St. Louis start-up, demonstrated its Parallel Crystal Report Server, which uses source code and a proprietary report template from Seagate Software's Crystal Reports. Mobile Application Servers hopes Parallel Crystal Report Server will help businesses improve customer response by letting customers verbally answer open-ended questions posed online.

IBM also showed off the talking Web browser and technology being developed at its Thomas J. Watson Research Center. Researchers at the Yorktown Heights, N.Y., laboratory are working on voice recognition systems that can be used in any language and can learn to identify individual voices — a feature that could be useful for security and access purposes.

Critics have said Microsoft Corp. has slowed the adoption of speech technology by not rolling it into Windows. They said the technology won't be able to enter the mainstream until it's included in Microsoft's operating system. But IBM officials said it doesn't matter whether speech technology is part of an operating system or runs on top of it.

Weil writes for the IDG News Service in Boston.

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New Cabletron CEO Sees Growth in Cable, Services

Patel insists corporate customers are key

THE RECENT replacement of Cabletron Systems Inc. co-founder, CEO and Chairman Craig Benson with technology guru **Piyush Patel** marked a shift by the Rochester, N.H., company — which, with poor financial results, has seen its stock price halved and then some during the past two years — to a more aggressive focus on emerging technologies.

Patel, 43, was the CEO of start-up Yago Systems Inc. and the brains behind its Layer 3 device — a switch that also performs high-speed routing. Since Cabletron bought Yago in January 1998, the device has become the hottest product in Cabletron's 16-year history.

Patel spoke recently with *Computerworld* senior editor Bob Wallace.

Q: What markets and technologies do you see poised for the greatest growth?

A: We want to focus more and more on products for cable operators, the xDSL market and pushing our routing switch, which has caching and load balancing as a package with servers for Web-hosting operations.

Q: Why do you think you're replacing Benson?

A: Craig is definitely on top of things, but with our success in Layer 3 [routing switches], he wanted to take the same energies and use them to drive other areas like Spectrum [network management], regular switching and service provider products.

PIYUSH PATEL has succeeded co-founder Craig Benson

Q: You've said you want to increase the focus on service providers. What does this mean to corporate users?

A: On the enterprise side, we fully plan on increasing our market presence. Our commitment will increase as we spend more aggressively in this area. It's our stronghold, and we will protect it.

Q: What can you do with technology to improve enterprise products?

A: We'll be spending big in applying technology to increase ... feeds and speeds oo enterprise products, which will translate into lower prices.

Q: What are the enterprise networking areas you're focusing most on?

A: Quality of service and policy-based management. The next big area for users will be supporting guaranteed quality for voice and video applications from the desktop to the [data center]. The ability to set policies [for network usage] is another key area.

Q: Will Cabletron still be known first as an equipment vendor?

A: A lot of work in the past has been on the hardware side, but we're looking to expand in network managemeot software and professional services. We would look for partners to develop applications to sit atop Spectrum and are considering either acquiring or taking a large equity stake in a professional services company

Q: What can you do to build your presence in the emerging converged voice/data market?

A: In the voice area, we would look to partner with large telecom companies to gain expertise on [traditional private branch exchanges] and their control software, while looking closely at promising start-ups for innovation.

Linux Hack Flies Below Intrusion-Detection Radar

Security experts search for 'Moof'

BY DEBORAH RADCLIFF

About six weeks ago, I got a call from Gerry Zepp, a former National Security Agency information systems security officer who is now an intrusion-detection analyst at an East Coast Internet service provider.

"Do you know any hackers named Moof?" Zepp asked.

For several months, Zepp had tracked someone who had been trashing servers at Internet providers and colleges in the U.S., Canada and England. All he had to go on was the hacker's alias, Moof, who showed up in the /etc/passwd files on Linux machines just before wiping out the file directories and rendering those machines unusable.

The attack is delivered in a one-two punch, said Mark Wood, product line manager at Internet Security Systems Inc. (ISS) in Atlanta.

It's the first punch — the sneaky way the cracker gets in — that network managers need to watch out for. The attacker finds ports to vulnerable services using a "slow port scan," in which a single packet is delivered to a different port about every three hours. A slow port scan flies beneath any intrusion-detection tool's radar, making it nearly impossible to catch.

"I noticed two to three packets a day, each coming from a different source IP address," Zepp said.

He said intrusion-detection tools aren't set up to catch and correlate single-packet queries to network ports. Rather, they're built to notice more obvious port scans involving numerous sequential port connection attempts.

Moreover, Woods added, "most intrusion-detection tools' awarenesses don't go longer than five to 10 minutes."

You can protect unused ports with sniffers (part of any intrusion-detection vendor's tool set) that sit at the ports and listen for suspicious connection attempts, Woods said.

But sniffer/agents are pretty dumb, Zepp said; you must tell them exactly what to look for. The solution? "Get to know your network traffic and how it's supposed to flow. Then look for anomalies," Zepp said.

Zepp started tracing the packets' port addresses. First stop: a university in England. Then he checked several Internet providers in Canada and the U.S. All were used as launch points for more attacks.

In all, Zepp collaborated with network managers who had had 10 servers compromised — and lost five.

For the second punch, Moof finds a vulnerable service. (Lately, he's been exploiting a new buffer overflow problem in MountD, the network file-sharing service in Red Hat Software Inc.'s Linux, Zepp said.)

The hacker helps himself to root or superuser privileges and installs backdoors for his future use (for more info, go to *www.cert.org/advisories/CA-99-03-FTP-Buffer-Overflow.html*).

An intrusion-detection tool is savvy to that part of the attack. But Zepp said it's too late: Moof has already picked up passwords and user IDs and left open a backdoor.

Then comes the knockout punch. The attacker uses the compromised Linux machine to launch other attacks. Then, after a few days, he erases the file directory to cover his tracks.

> Get to know your network traffic and how it's supposed to flow.
>
> GERRY ZEPP, INTRUSION-DETECTION ANALYST

A 2-year-old Internet provider in Silicon Valley just went through its second bout with Moof. Drew, a vice president at the provider, didn't want his last name or his company's name used. But he did want to get the word out to other network managers.

A year ago, Drew saw that Moof was using his company's server to launch attacks on other sites. Worried, Drew spent all night copying backup files onto a reformatted drive.

Fortunately, the redundant server was ready when Moof erased the file directory. Otherwise, the incident could have cost the provider 12 hours of downtime during its crucial ramp-up stage.

Then, two months ago, Zepp traced Moof to Drew's company again. This time, the attacker, using single-packet port scans, tried again to exploit Network File System (NFS) services, which Drew had patched. His team had already shut off Telnet and other unused services.

He advised others to do the same, adding, "Check with your OS vendor for patches to the NFS vulnerability. If you're not using network file sharing, then by all means, turn it off."

Radcliff (derad@aol.com) is a freelance writer in Northern California.

IBM
Ethical Hacker

Start-Up Offers Itemized Bills for IP Network Traffic

One-size-fits-all mentality gives way to balancing quality, quantity of data traffic

BY CYNTHIA MORGAN

IMAGINE THAT your long-distance carrier stopped sending detailed bills and simply charged for total use. You would have no way to divvy up the bill based on actual use and no way to track who made 16 calls to Timbuktu after hours.

What would you do? Find another carrier — that's what.

Yet that's exactly how most corporations are billed for network data traffic. Their increasing reliance on network services, however, makes the need for knowing who did what on the network just as important as who called whom.

Start-up XACCT Technologies promises to do for IP networks what the phone company's call detail records (CDR) have done for telecommunications. The final goal: a single bill for all network services, data and voice that gives information technology managers an opportunity to balance quantity and quality of service with price.

Most U.S. corporations have taken a single-price, smorgasbord approach to paying for IP services. But modern corporate networks' need for rich content and quality-of-service provisions, as well as the trend of converging voice and data networks, is making the one-price-fits-all approach impractical.

In fact, said Paul Hughes, an analyst at Aberdeen Group Inc. in Boston, communications charges will likely change places in the coming years. "Voice will become more of a flat-rate charge while high-speed data is commonly billed on a usage basis," he said.

"Service providers are realizing more and more that the current Internet pricing scheme isn't a business plan; it's a going-out-of-business plan," said Limor Schweitzer, XACCT's chief technical officer and co-founder. Single-price Internet access is giving way to service-level usage agreements, particularly in the corporate sector. And as service providers move to a per-use model, IT managers will be forced to assign itemized bandwidth and service charges to departments and individuals, Hughes added.

On the telephony network, CDRs are a basic and expected part of business accounting. XACCT's flagship product, XACCTusage, captures usage information from the IP network, at all layers, and produces what company officers call XDRs, or XACCT detail records. Like phone company CDRs, they describe who used what on the network, and when they used it.

But few corporations have worked out exactly how to bill for services on a converged voice-and-data network. Separate and detailed bills will likely be required for services beyond voice and simple network access; For example, how do you bill for voice over IP, streaming video and sound and IP fax? CDRs are based on telephone extension numbers; data services billing are based on users, some with dynamic IP addresses that change with every new log-in.

XACCTusage takes incoming data from the network router, such as source and destination IP addresses, size and time stamps, and matches that data with user information from a Lightweight Directory Access Protocol server or quality-of-service policy server. The software uses the result to create an XDR for the individual user and track his actions online. "XACCT gives the enterprise the ability to differentiate between groups and their network usage. It also lets the corporation charge users according to the importance of the data," Hughes said.

XACCT's biggest successes are in Europe, where metered Internet access is the rule. About 40% of the company's business comes from Europe, Schweitzer said. ▶

XACCT Technologies Inc.

XACCTusage improves the use of IP networks by highly detailing costs and user actions

CEO ERIC GRIES leads XACCT's efforts to offer detailed, telco-like usage records for network access. "It's not enough to track time online. Companies need to know what each person is doing online as well"

Location: 2855 Kifer Road, Suite 105, Santa Clara, Calif. 95051

Telephone: (408) 654-9000

Web site: *www.xacct.com*

Niche: Service providers and large enterprise networks that need to track and/or bill for IP network use.

Product: XACCTusage manages the provisioning and usage tracking of an IP network, creating a "data bill" similar to phone bills.

Company officers:

- Eric Gries, CEO
- Limor Schweitzer, chief technical officer and co-founder
- Eran Wagner, executive vice president and co-founder
- Anil Uberoi, vice president of marketing

Milestones: May 1997, company founded; September 1998, XACCT-usage shipped.

Employees: 55 and growing.

Burn money: Funding comes from several venture capital firms including Trident Capital and Hambrecht & Quist. The Israeli government, via its seed partners program, is also an investor.

COMPUTERWORLD emerging companies

Potential stumbling blocks:

- IP-only; other network protocols need not apply. That may be a minor problem for many networks today; it is likely to be no problem at all as IP assimilation continues to grow.

But that could leave holes in billing for older network systems or in something as new as, for example, non-IP wireless connections.

- Competition from 800-pound gorillas. XACCT needs to quickly establish its own billing formats as de facto standards. Otherwise, the need to account for network services is so widespread – and so acute – that companies like AT&T Corp. and Cisco Systems Inc. may enter the fray with non-XACCT-compatible tools.

[the buzz] STATE OF THE MARKET

Getting in On the Action

■ Network services billing is a hot topic for many companies, and several vendors own at least a small piece of the action. Companies like Select Technology Group (*www.select.com*), Portal Software Inc. (*www.portal.com*), Kenan Systems Corp. (*www.kenan.com*), Concord Communications Inc. (*www.concord.com*) and CableData Inc. (*www.cabledata.com*) have entered the network services billing market to varying degrees.

Top Rival

■ But few companies other than XACCT offer billing mediation, or the ability to mate monitoring data with actual charge systems. Narus Inc. stands as XACCT's toughest rival in this arena.

The Redwood City, Calif., company was founded by VDOnet alumnus On Cohen in 1997 with venture capital money from Walden Ventures and the Mayfield Fund.

Narus' mediation product also integrates network services tracking with usage billing, using a technology it calls a semantic traffic analysis platform.

Like XACCTusage, the system mates network traffic reports with user-driven events, such as the initiation of an IP fax or launching of a streaming video over the intranet.

The event triggers creation of an IP Detail Record, which can be saved in an Oracle database or included in other billing system records.

Waiting in the Wings

■ Both Narus and XACCT are pushing hard to establish themselves, while major players such as Cisco and the telephone companies. Those companies are watching for emerging de facto standards.

Aberdeen Group analyst Paul Hughes said the companies' strategy of striking deals with every possible rival, including existing network billing services, is a smart one.

"The market's wide open right now; the company that can keep its software as flexible as possible stands the best chance of absorbing any new standards and succeeding in the long run," he said.

Narus Inc.

Location: Redwood City, Calif.

Telephone: (650) 306-9100

Web site: *www.narus.com*

Take Your Show On the Road

BY DAVID STROM

TAKING YOUR computer-generated presentation with you has never beeo easier, thanks to a growing number of lightweight video projectors that attach to your laptop.

Although the notion of "lightweight" is open to interpretation, a projector weighing less than 10 pounds is a reasonable load to lug through airports and in and out of rental cars.

In years past, projectors were heavier (approximately 25 pounds) and more costly (more than $15,000), but new manufacturing methods have trimmed the weight, brought down the costs and packed more features in the models.

I tested four units: CTX Opto Inc.'s EZPro 610, Sanyo Fisher Co.'s PLC-SU10N, Epson America Inc.'s Powerlite 7500C and NEC Technologies Inc.'s Multisync LT81. Prices ranged from less than $4,000 to nearly $10,000, and the units weighed between 8.6 pounds and a hair shy of 10 pounds. Each unit promises to display 1,024-by-768-pixel screen resolutions, but in my tests only the Epson delivered satisfactory images beyond 800-by-600-pixels.

To get a feel for how these units perform, I attached each to both new and old PC and Macintosh computers along with a video camcorder and observed their output under a variety of lighting conditions.

For the most part, the projectors are easy to set up: You plug in their power cable, connect them to the video output of your computer, wait a few minutes for them to warm op and begin your presentation. That's good news because nothing can ruin a presentation more than having to fiddle with your audio/visual cootrols while your audience is waiting for the show to start.

Although each unit includes a wireless remote control that doubles as your computer's mouse, none of the remotes was as comfortable to use or as easy to manipulate as the wired mouse that comes with your computer. Some projectors come with tiny single or stereo speakers, but the sound quality isn't very good compared with what you get from a decent PC sound system. Also, the supplied audio connectors don't match up with what you need to hook up your PC.

All the units have a zoom lens so you can adjust the size of the image to match your screen and room conditions. And all hut the Epson have a feature to magnify a portion of the screen image, which lets you highlight a particular point during your presentation.

If you do lots of presentations, you'll want the hrightest possible projector. That means you can keep room lights dim and see both your audience and your show, as well as move the projector further back from the screen and project a larger image.

Overall, any of these projectors will do well with your presentations. ◗

CTX EZPro 610

CTX Opto Inc.
www.ctxopto.com
Weight: 9.9 pounds
Lumens: 600
$3,995

The CTX unit was the least expensive and had the poorest display quality of the units tested, though it was the most uniform of any of the units in image brightness measured edge-to-edge. The remote control is difficult to use. One plus is that the unit comes with two video input connectors. That's helpful if you want to switch between two PCs for your show. It also comes with a hard-shell wheeled travel case, making it easier to transport to protect. The on/off button on the unit has several modes, making it somewhat difficult to deal with, and it had some trouble projecting accurate 1,024-by-768-pixel screens on some PCs. It covered a 56-in. diagonal when eight feet from a screen.

Sanyo PLC-SU10N

Sanyo Fisher Co.
www.sanyolcd.com
Weight: 8.6 pounds
Lumens: 600
$6,995

The Sanyo was the lightest unit tested. It comes with a PC card slot to display your computer files directly, but its software to convert PowerPoint slides into its own format can be tedious for long presentations. The good part is that if you can get your presentation transferred to the PC card, you can leave your laptop at home. Its zoom is somewhat limited and can magnify only the center of the screen, unlike the NEC and CTX units. The unit must be focused via the remote; the others focus manually with the lens barrel. Unlike the other units tested, it didn't come with audio cables (if you want to run a show with sound effects from your PC). It had trouble displaying images from an older Compaq in either 800-by-600- or 1,024-by-768-pixel resolution, and its screen was the darkest of those tested. It covered a 64-in. diagonal when eight feet from a screen, the largest area of the projectors tested.

Epson Powerlite 7500C

Epson America Inc.
www.epson.com
Weight: 9.4 pounds
Lumens: 800
$9,999

The Epson was the most expensive unit tested and it showed – its images were the sharpest of the four units. It was also the only unit that could consistently project 1,024-by-768-pixel images without problems, though the images were somewhat rhomboid, or curved. It comes with stereo speakers and an array of special visual effects to highlight areas of the screen and change the shape of the mouse pointer, which may be more a matter of style than substance. It includes a series of on-screen help menus, something that could come in handy if you're pressed for time before a show. It was the only unit tested to come with a long-life projector bulb: The manufacturer claims a five-year life span. Although it covered a nice, 63-in. diagonal when eight feet from a screen, it didn't come with magnification features like the other units.

NEC Multisync LT81

NEC Technologies Inc.
www.nectech.com
Weight: 9.9 pounds
Lumens: 800
$5,995 (optional PC Card adapter, $399)

The NEC projector had the best valon and was noticeably brighter than the two 600-lumen projectors. Although the heaviest of the models tested, the LT81 did the best overall job at projecting images from the widest range of computers. NEC's remote control has a nice laser-pointer feature – something that can be useful and that was unique among the projectors I tested. But at the higher, 1,024-by-768-pixel resolution, it cut off part of the screen. It has the ability to magnify on image and zoom in to part of the screen, though its magnification wasn't as powerful as the CTX's. In terms of light output, the projected image was twice as bright in the center than at the edges and was brighter than the CTX and the Sanyo. It covered a 60-in. diagonal when eight feet from a screen. It came with a soft travel case. ◗

Strom travels frequently around the country giving speeches. He is publisher of his own Web Informant series of essays at http://strom.com.

The Last Time This Many Great Minds Met in Philadelphia There Was a Revolution.

Congratulations to the finalists in the annual Intel International Science and Engineering Fair.

In May, nearly 1200 students from 47 countries gathered in Philadelphia. Not to create a new nation, but to showcase their research projects at the Intel International Science and Engineering Fair. As the world's largest pre-college science competition, the Intel ISEF brings students together to share ideas and interact with some of the world's leading scientists. The fair, celebrating its 50th anniversary, provides over $2 million in scholarships and awards to students, plus the grand prize, a trip to attend the Nobel Prize Ceremonies in Stockholm, Sweden. By recognizing these students, we hope to encourage and inspire their spirit of exploration and discovery. To find out the names of this year's winners, or how to participate in the next Intel International Science and Engineering Fair, visit **www.sciserv.org**. And to learn more about Intel's commitment to science, math, engineering and technology education, visit us at **www.intel.com/education**.

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INTERNATIONAL SCIENCE AND ENGINEERING FAIR

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PCI-X

BY JAIKUMAR VIJAYAN

PERIPHERAL Component Interconnect-X (PCI-X) technology promises to improve server performance by increasing the flow of data between a computer's central processing unit and various peripherals like network cards, printers and storage disks.

PCI-X builds on today's PCI-based I/O buses. Think of a server's I/O bus as a highway for carrying data between a server's CPU and various peripherals. Generally, the faster the flow of data through the highway, the better the server and applicatioo performance.

The technology is the result of a vendor coalition led by Compaq Computer Corp., IBM and Hewlett-Packard Co. to build systems that take advantage of Intel Corp.'s faster chips.

The current 32-bit PCI bus — developed by an Intel-led vendor coalition in 1992 — operates at 33-MHz with a peak throughput of 132M byte/sec. Think of it as a 32-lane highway with a 33 mph speed limit. Think of the throughput as a measure of the total traffic or data passing through that highway in a given time period.

Until receotly, that performance has been adequate for most server requirements. But with Iotel churning out faster chips, there's now a gap betweeo the PCI bus' capabilities and Intel chips. New chips can process data mucb faster than before, but the roadways that deliver the data to them have remained slow.

PCI-X is an attempt to address this problem. Expected by year's end, PCI-X is a 64-bit bus that runs at speeds up to 133 MHz. It will theoretically be capable of transmitting data at speeds exceeding IG byte/sec. Using the same analogy as before, a PCI-X bus would be a 64-lane highway, with a speed limit of 133 mph, capable of carrying roughly 10 times the traffic in a given time frame compared with PCI.

Further boosting PCI-X performance will be many other tweaks that improve reliability, timing and scalability of the bus, says Jonathan Eunice, an analyst at Illuminata Inc. in Nashua, N.H.

"It's like a brand-new highway with nice wide lanes, good lane markings, better safety equipment and better on- and off-ramps" compared with PCI, Eunice says.

"It's not everythiog you might want for the next 20 years, but it's got good compatibility with today's gear plus good extensions for the next three to five years," he says.

For all its performance gains, PCI-X is being positioned as an interim technology while the three vendors develop a more long-term I/O bus architecture called Future I/O.

Clouding PCI-X's future is a standards dispute between the PCI-X faction and a group of vendors led by Intel that is developing a parallel I/O technology called Next Generation I/O. At the heart of the dispute is who gets control over future server I/O technology. System vendors like Compaq and IBM — already wary of Intel's growing dominance in the hardware business — hope to wrest some control by developing and defining PCI-X and Future I/O as the next I/O standards, which they hope Intel will eventually support.

"Ultimately there's going to be a standard I/O bus out there, but it is going to take another two or three years for that to happen," says Joseph Ferlazzo, an analyst at Technology Business Research Inc. in Hampton, N.H. ▶

DEFINITION

PCI-X is an upcoming bus design. A computer's bus is much like a bus on the road, transporting information from one point to another. PCI-X — PCI stands for Peripheral Component Interconnect — is aimed at making the flow of data between a computer's microprocessor and attached devices even faster than it is today. Systems based on PCI-X are expected to start shipping by the end of this year.

AT A GLANCE

A Comparison of Server I/O Architectures

Below are four architectures. Some are currently used, others are proposed solutions.

	PCI	PCI-X	Future I/O	NGIO
Clock speed:	33 MHz	133 MHz	Not available	Not available
Throughput:	132M byte/sec.	1G byte/sec	2G byte/sec	2.5G byte/sec.
Availability:	Now	End of year	2001	2001 or 2002
Vendor support:	Intel	Compaq, HP and IBM	Compaq, IBM, HP, 3Com and Adaptec	Intel

Are there technologies or issues you would like to learn about in QuickStudy? Send your ideas to QuickStudy editor Stefanie McCann at stefanie_mccann@computerworld.com.

MOREONLINE

For more information about PCI-X, visit our Web site.
www.computerworld.com/more

FAQs

Server I/O architectures can be confusing. Here's some basic information on PCI-X:

How will my server benefit from PCI-X?
The I/O speeds will more than double, which will allow enterprise-class systems and applications to perform faster and more efficiently with reduced bottlenecks.

Can PCI-X and PCI cards be mixed in the same server?
Yes. But the bus will run at the speed of the slowest card.

What happens to PCI once PCI-X starts shipping?
It is expected that vendors will continue to ship PCI products for a few more years.

When will PCI-X based products become available?
In the second half of 1999.

How long will it take for the industry to adopt PCI-X?
PCI-X uses technology that is available today – it is actually easier to design PCI-X-based products than those based on 66-MHz PCI. This will lead to faster and broader adoption of PCI-X. Typically, products with far superior performance that add customer value are priced accordingly.

Can PCI-X cards be added to existing PCI-based servers?
Cards can be designed to fit into either 3.3V or 5V I/O slots. However, the full benefits wouldn't be realized if it was used on an existing bus.

What are some of the competing server I/O architectures?
The other technologies, although not all available right now, are PCI, Next Generation I/O (NGIO) and Future I/O (see chart at left).

What is Intel's role in all of this?
Intel is working on developing NGIO. It is evaluating PCI-X technology.

SOURCE: INFORMATION TAKEN FROM THE COMPAQ SITE AT WWW.COMPAQ.COM/PRODUCTS/SERVERS/TECHNOLOGY/PCI-X-QA.HTML

MOVING TO WINDOWS 2000

BIT BY BIT

OVER THE PAST SIX MONTHS, we have learned that Windows NT 5.0 will actually be called Windows 2000, that it will use a hierarchical file system, that it will have better workstation security than NT 4.0, that it will support new I/O standards like I20 and Fibre Channel and that it will be released in October. So, now that you know a bit more about Microsoft Corp.'s strategy for its new operating system, what are you going to do?

Computerworld revisited the NT issue with three CIOs to find out if this year's developments with Windows 2000 would make them alter their server operating system strategies, which they shared with *Computerworld* readers six months ago [Dec. 14].

Back then, one CIO anticipated moving to NT within a year of its release. Another was doing all he could to fight off NT's popularity, whicb was starting to infiltrate his nearly exclusive NetWare shop. And the third had little faith and wasn't giving NT much of a chance to matcb the stability of his Unix servers.

Today, the first CIO is still ready — and now waiting — for Windows 2000. The secood moved oo to another job and was replaced by a CIO who's letting NT spread. And the third still has little faith that Windows 2000 can replace his Unix server, but now he's willing to let the new operating system prove its reliability claims.

Committed to Windows 2000

The Chicago Stock Exchange
Steve Randich
CIO
Chicago

The Chicago Stock Exchange can't take the reliability of its server operating system lightly. Not many companies can, but the urgency just seems a bit higher when billions of dollars are exchanged daily, and that's why the exchange is continuing its full transition from Compaq Computer Corp.'s VAX/VMS to Windows NT.

That's right — NT. Sounds offbeat because NT isn't generally thought to be too reliable. But Steve Randich, CIO at the Exchange, is confident in his decision because third-party applications and clustering technology have helped him guarantee 100% uptime from his 50 NT 4.0 servers. Plus, be believes Microsoft will put the reliability and scalability of Windows 2000 on par with Unix.

So why not just go with Unix? "We tried, but the Uoix development we outsourced was taking longer and costing more money than we had hoped. But more importantly, NT seemed to have a brighter future than Unix from a third-party, software vendor point of view," Randich says.

NT also allows the exchange to benefit from the economies of the Windows/Intel Corp. standard. Not an overly critical factor, according to Randich, but be does like the freedom to choose hardware from Dell Computer Corp. and Compaq rather than running Solaris and having to buy from Sun Microsystems Inc.

Update: Six months later, CIOs show more interest in Microsoft offering By Kevin Burden

When Randich decided to port to NT in 1996, he did so knowing Microsoft was making NT its main platform. "We also thought by the time we were done transitioning our system to run on NT, NT 5.0 would be around." That hasn't happened, but Microsoft also hasn't changed its commitment to NT's future, he says. "That in itself makes us confident that we made the right decision."

During the past six months, the exchange completed porting and deploying the front ends of its key trading systems to NT 4.0. It's now working on transitioning more systems, including Internet-based ones.

Still left on the VAX/VMS system is the back-end, core trading engine. Randich would like to port that part to NT, but the trading volume has grown tenfold in three years while riding the Internet trading wave, which is forcing the core engine onto larger Alpha processors. "Eventually, even that part will move to NT, we just don't have a time frame for it," he says.

When Windows 2000 is released in October, Randich doesn't expect to jump to it right away. There's a lot about the new version that influenced his decision to go with NT, such as better reliability, increased scalability and better fault tolerance. But the exchange moved on to NT 4.0 early enough that it has found ways to shore up the system's reliability shortcomings by using applications with built-in fault tolerance.

The setup has two replicated databases from Versant Object Technology Corp. synchronized on separate NT servers. If one crashes, users and applications fall to the other. So while Windows 2000 may mean Randich can rely less on his own fixes, its reliability promises aren't as critical as they once were or as they are to other organizations.

OS About-Face

Richards, Watson & Gershon
Scott Press
Manager of information systems
Los Angeles

Much has changed in six months at the law firm of Richards, Watson & Gershon, and those changes are only a first step. There's a new chief in charge of information technology, and he isn't married to Novell Inc.'s NetWare, as was his predecessor. Where NT's popularity was once viciously fought off, the doors are now being held wide open.

The firm remains largely a Novell shop with eight NetWare servers handling mostly file-and-print functions. But the firm is now getting its first taste of Microsoft NT 4.0, and Scott Press, the new manager of information systems, says it's just the beginning of a grand migration.

Press has no distaste for NetWare, in fact "NetWare is like an old coat you love to wear. We're old friends, and I know exactly how it's going to feel," he says. Nor does Press' decision to migrate to NT have to do with his anticipation for Windows 2000. "I didn't upgrade to NetWare 4.0 until it was in production for two years, and I feel the same way about Windows 2000. When they are done molesting it into its different permutations, that's when I'll consider it."

No, the firm is moving to NT because Press knows Microsoft designs products to work well with other Microsoft products, and he doesn't want to manage a dual NT/NetWare environment.

The first move to NT was driven, at least in part, by year 2000. Press knew that the firm's accounting package, running on an old IBM System/36, wouldn't be Y2K-compliant. So, the law firm acquired Los Angeles-based Elite Information Systems Inc.'s Elite, which runs best on NT and Microsoft SQL Server, as its oew accounting package.

Now the dominoes start to fall NT's way. The firm uses Novell's GroupWise for e-mail, but Elite uses Microsoft Exchange to communicate. An Exchange server is now in order, but that calls for two sets of licenses: one set so users can still log in to NetWare for file and print and another to access the NT domain — exactly what Press says he wants to avoid: "I keep asking myself, why stay with NetWare and double my operating system cost?"

But for some time, NetWare and NT will coexist on the same network. NetWare will act as the network operating system because its directory service is superior to NT's abilities to manage the network, Press says, while NT will run the firm's applications.

That setup could change if Press moves to Windows 2000 and if the Active Directory, a global directory of users, services and device information, is to his liking. The directory is the one part of Windows 2000 that Press says he is truly intrigued with because he sees it as a facsimile of Novell Directory Services. "I think it's brave of Microsoft to admit by example that Novell built something really neat and they are willing to build an entire operating system around the concept," Press says.

Skeptical of Promises

David Bill
Vice president of engineering
Spinner Networks Inc.
San Francisco

The powers at Spinner.com have always been skeptical about NT's ability to reliably run its Web-based company. And so far, nothing they have learned about Windows 2000 has changed their minds. However, if the new version sets an improved standard for reliability, "We will consider it then," says David Bill, vice president of engineering.

Spinner's business is its Web site. Real-time streaming of digital music is what it delivers, and with nearly 3 million listeners, Unix is all Bill trusts to keep the servers running.

Nearly one year ago, Bill repowered the site with a dozen new Solaris servers from Sun Microsystems. Bill believed then, and still believes, that NT wouldn't hold up under the rigors of his applications. "Unix does, and while we pay a premium for its reliability, it's a premium worth paying," he says.

Still, if Windows 2000 lives up to its promises of better stability and scalability, Bill is willing to give it a chance. The costs Spinner can save by using Intel hardware is why Bill stays up to date on Windows 2000 news and why he will thoroughly test its final release. He has no interest in being one of the early adopters of the new operating system, which is why he's not bothering with the beta versions. "Stability is more important than saving money or being first to market," he says.

Bill may be pro-Unix, but that doesn't mean he's anti-NT. He believes in matching applications to the right operating system, which is why Spinner's file-and-print queues and e-mail are run on an NT 4.0 server.

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1972

Technology Happenings

■ **A *Rolling Stone* article** by Stewart Brand on the computer game Space War and Xerox Parc describes Alan Kay as a "computer bum. He loved to stay up all night, he and the machine in a love-hate relationship." Brand also says a "**personal computer revolution**" is on its way and it will have the same "mind-bending" potential of psychedelic drugs.

■ **Nolan Bushnell** introduces Pong and founds Atari.

■ **Dennis Ritchie** at Bell Laboratories develops C, so-named because its predecessor was called B.

■ **Steve Wozniak**, a student at the University of California at Berkeley, develops a "Blue Box" tone generator to make free phone calls. He sells them in his dorm.

■ The **8008 microprocessor** is introduced by Intel Corp. It's twice as powerful as the 4004.

■ **Seymour Cray** founds Cray Research Inc., which goes on to create the world's most powerful supercomputers.

Born in 1972

■ **Mark Abene** (a.k.a. Phiber Optik), U.S. computer and telephone cracker. He's imprisoned for a year in 1994.

Other Notables

■ American **Bobby Fischer** defeats Soviet **Boris Spassky** for the international chess crown.

■ The **Dow Jones** tops 1,000 for the first time on Nov. 14, closing at 1,003.16.

■ U.S. swimmer **Mark Spitz** wins seven gold medals at the Munich Olympics, setting world records in each event.

■ The **U.S. Supreme Court** rules that the death penalty could be seen as "cruel and unusual punishment." Many states reconsider the death penalty; California and New Jersey abolish it.

■ **Best Picture:** *The Godfather*.

■ Flashback is produced with the assistance of The Computer Museum History Center in Mountain View, Calif.

Xerox Parc and the Alto

BY LESLIE GOFF

BOB TAYLOR recalls taking the wind out of the sails of a secretary who had just gotten a brand new, top-of-the-line IBM typewriter. It was 1972, and Taylor was heading up a lab at a then two-year-old research facility that was working on a small interactive computer.

"She was showing the typewriter off to a group of six or seven people, and I walked over and hit a couple of keys and said, 'You know, we're going to make this thing obsolete,'" Taylor says. "And everyone just looked at me like I was crazy."

Taylor was associate manager of the Computer Science Lab at Xerox Corp.'s Palo Alto Research Center (Parc) in Palo Alto, Calif. He headed up the group of brilliant, iconoclastic computer scientists who were developing the Alto, generally credited as the first PC.

Taylor says he thought computers should be devices for communicating with others, not engines for making calculations; that everyone should have one; and that all computers should be networked to one another. But it took a while before he got his team interested in his vision of individual, interactive computing.

Initially, they were building a time-sharing system, a clone of Digital Equipment Corp.'s PDP-10 with a microcoded operating system. That system, dubbed the Maxc (Multiple Access Xerox Computer), was a continuation of work started by Berkeley Computer Corp. Berkeley had run out of capital,

THE REVOLUTIONARY XEROX ALTO was the forerunner of all of today's PCs with its GUI, mouse and local hard drive

and its founders, including Peter Deutsch, had all agreed to join Parc to finish their project.

By the time the Maxc was finished, Taylor says, the team decided to take up his cause, to develop a display-based, interactive PC. They toiled to build a system that integrated the ideas of Douglas Engelbart for a graphical user interface, a mouse, a local disk drive (a 2.5M-byte removable cartridge drive) and a keyboard.

The ideas behind the Alto weren't new; rather, their time had come. Technology had advanced to the point where they were viable. And by the late 1960s, Taylor notes, it had been possible to project the falling prices of semiconductor memory. The team capitalized on that, putting 128K bytes of memory in the Alto, at a cost of about $4,000, says Ed McCreight, another Parc employee who worked on the project. He's now the principal computer scientist for advanced technology at Adobe Systems Inc.

"We threw memory at any problem we could find; that was really the cleverness of [the Alto]," McCreight adds. "Everyone said [it] was a waste. ... But we said, 'We know memory is going to get cheaper and we want to see what we can do with it when it does.'"

Now retired, Taylor says there isn't anything on today's PC that isn't a legacy of the Alto project, from the display to the software to the GUI.

In fact, over the next decade the Alto project would spawn Ethernet; Smalltalk and object-oriented programming; the first page description language and WYSIWYG graphics; and other technologies. The technologies, and the people who created them, would beget numerous Silicon Valley start-ups — from Apple Computer Inc. to 3Com Corp. and more.

But, largely a result of Xerox management, the Alto itself never became a successful commercial product.

Although founded in 1970 as a research arm for Xerox, Xerox Parc ended up functioning more like an academic research center or a national computer lab whose innovations became part of the public domain than like the research-and-development arm of a corporation. Xerox management failed to see the opportunities afforded by many of the innovations at Parc, and many key innovators ended up defecting to start their own companies.

One such missed opportunity took place when Xerox management ordered resistant Parc employees to demonstrate the Alto's GUI to an aspiring computer jockey named Steve Jobs. Apple Computer's history tells the rest of that story.

"Parc was one of the first industrial labs that was serious about keeping its research proprietary. And it is to the great benefit of the industry that they didn't succeed very well," says Deutsch, a key contributor to the development of Smalltalk. He now owns the consulting firm Aladdin Enterprises in Menlo Park, Calif.

"I was driving up [Highway] 101 the other day, and I saw six consecutive billboards for software companies," Deutsch says. "I think that at least the Parc legend, and to some extent what Parc did, contributed to making Silicon Valley the epicenter of the world computer culture."

Goff is a frequent contributor to Computerworld. Contact her at lgoff@ix.netcom.com.

MORE ONLINE
For more on Xerox Parc, visit our Web site.
www.computerworld.com/more

The Equal Rights Amendment passes Congress. When sent to the states, only 22 ratify it by the end of the year. It fails to pass.

President Nixon orders the "Christmas Bombings" of Hanoi and Haiphong, killing more than 1,300 North Vietnamese civilians.

JANUARY FEBRUARY MARCH APRIL MAY JUNE JULY AUGUST SEPTEMBER OCTOBER NOVEMBER DECEMBER

Five men are caught breaking into the Democratic Party's campaign headquarters at the Watergate in Washington.

Palestine terrorists shatter the Munich Olympics. Fifteen die.

Richard Nixon defeats Democrat George McGovern in a landslide presidential election.

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Fran Quittel

Nationally Recognized Career Expert and Computerworld's CareerAdvisor Columnist

With a lengthy background in high tech careers and recruiting, Computerworld's CareerAdvisor Fran Quittel specializes in providing in-depth information for job seekers and a "Recruiting Scoreboard" to help employers audit and improve their internal recruiting practices. Fran is author of the book *Firepower: Everything you need to know before and after you lose your job* and is the original creator of The FirePower Career Forum on The Microsoft Network. She also publishes career advice at www.careerbabe.com and tips for employers at www.yourcareer.com

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Java's Best Blends

Profiles of four Java professionals show how the programming language complements almost any IT skill

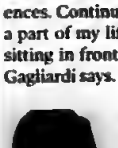
By Jill Vitiello

JAVA'S HOT. SCALDING EVEN. Will it stay that way? Experts say it will. More employers than ever before are looking for people with Web development skills, according to information technology recruiters.

"Companies are not looking for dabblers who use Microsoft Front Page at home," says Michelle Negri, a former recruiter at Romac International in Phoenix. "They want real pros who know what they're doing. Most want Java skills in combination with C++ or Oracle experience."

Here are snapshots of four professionals whose careers are really jumping thanks to Java. They told us how they acquired the skill and where they see it taking them.

DAN GAGLIARDI
AGE: 28
EDUCATION: University of Ottawa; he's a major in civil engineering; minor in computer science.
ORGANIZATION: AT&T Wireless Services Inc.
CITY: Seattle
LIFE BEFORE JAVA: Worked as a civil engineer.
ON THE JOB: Gagliardi developed applications for his engineering employer. He realized he enjoyed IT and began to teach himself what he considered the most marketable database technology — Oracle. He soon found work doing it full time. Today, he's using his skills as an Oracle specialist to research how Java can be implemented in existing applications and new projects.
GOT JAVA: Like many, Gagliardi is learning Java on the job. "There's a software learning curve," he says. "You get into it, play around with it and learn its features."
JAVA FUTURE: Database-driven Internet applications will be hot for years to come, Gagliardi says. Java, or a descendant of Java, will be an important language during the next 10 years. With the combination of his Oracle and Java skills, Gagliardi says, he'll stay employed for a while.
CAREER ADVICE: "I read books, take classes and attend conferences. Continuing education is a part of my life as long as I'm sitting in front of a computer," Gagliardi says.



NAGENDRA REBANUR
AGE: 31
EDUCATION: He has a master's degree in computer engineering, University of South Carolina.
ORGANIZATION: Contractor for Manpower Technical, working at North Carolina Division of Water Quality, Department of Environment and Natural Resources.
CITY: Raleigh, N.C.
LIFE BEFORE JAVA: Worked as a C++ programmer.
ON THE JOB: Rebanur is part of a team [that's] developing an end-tier enterprise JavaBean application, which will help government workers keep better records and improve their reporting capabilities.
GOT JAVA: Rebanur worked at Duke University for four years as a C++ programmer. He went on to work for a major pharmaceuticals firm where he picked up Java skills on the job. In his next assignment, he received brief, formal training in Java, but by then he was mentoring others new to the language.
JAVA FUTURE: Rebanur says the future demand for Java will be stronger than it is now. "The ability to download software chunks and build functional applications is a hot idea," he says. "Java translates well on the Internet. It will be important in e-commerce and in developing low-cost network appliances."
CAREER ADVICE: "Not many systems are taking advantage of agent-based technology, which allows you to 'push' software chunks to other machines, get them executed there and send results back. I think that will be more important in the future," Rebanur says.

CHRIS LEHEW
AGE: 27
EDUCATION: He's working toward a degree in computer science at North Carolina State University — graduation is imminent.
ORGANIZATION: A contractor for Manpower Technical; he just completed a project for Square D, a company of Schneider Automation Inc.
CITY: Raleigh
LIFE BEFORE JAVA: Worked one summer as a C++ programmer in Venezuela.
ON THE JOB: Lehew was too eager to put his Java skills to work to wait for graduation. The lure of abundant, interesting jobs in his area brought him the opportunity to work on an international team that used Java to build client/server and graphical user interface applications to facilitate factory automation.
GOT JAVA: A friend drew his attention to Java on the Internet, and Lehew was hooked. "It was apparent that Java cures a lot of the woes of C++," Lehew says. He taught himself Java and then attended a brief Java basics course at college and wound up working as the professor's teaching assistant.
JAVA FUTURE: Lehew says Java has "a grand horizon" because of its flexibility and usefulness on the Internet.
CAREER ADVICE: "The whole point of a computer science education is to teach you how to teach yourself new languages," Lehew says.

JOHN MILLSPAUGH
AGE: 49
EDUCATION: Doctorate in psychology, Iowa State University.
ORGANIZATION: Telcordia Technologies Inc.
CITY: Piscataway, N.J.
LIFE BEFORE JAVA: Worked as a human factors engineer.
ON THE JOB: Millspaugh joined Bell Labs in 1980, working with designers to make products user-friendly. He went with Bellcore (now Telcordia Technologies) in 1984 and gradually moved into programming because, he says, he loves "the hands-on work of building and fixing things."

A couple of years ago, he became interested in writing in Java and just did it. He used his Java skills to develop a database application for a new product.
GOT JAVA: Millspaugh bought the book, *Java in a Nutshell*, downloaded the Java Development Kit from Sun Microsystems Inc.'s Web site and taught himself the language.

He took a weeklong class in Java offered by Bellcore and supplemented that learning with courses in Java database access component and Java threads for multithreading applications.
JAVA FUTURE: Java is here to stay, Millspaugh says. It has all the power of C and lets programmers build usable applications quickly, he says.
CAREER ADVICE: "Java is one of the best ways to get yourself up to speed with more current technology that can open doors for you," Millspaugh says.

Vitiello is a freelance writer in East Brunswick, N.J.

Java Is Perking

Percentage of hiring managers who say their staff has Java skills and plan to train their staff in Java, as well as the percentage of salary premiums they offer for Java skills:

INDUSTRY	STAFF WITH SKILL	PLAN TO TRAIN	SALARY PREMIUM*
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
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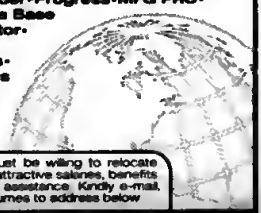

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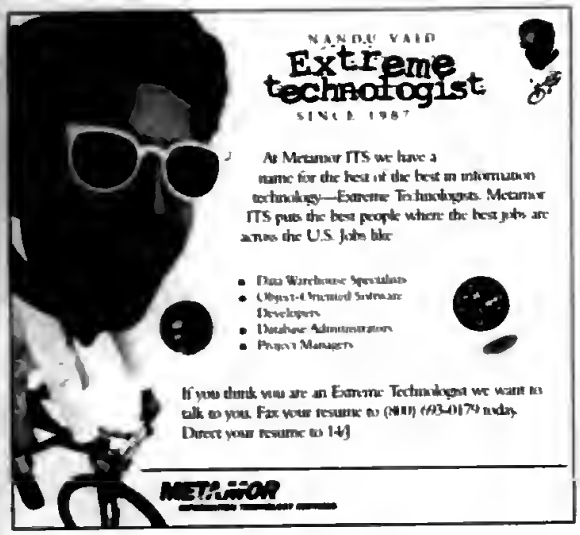

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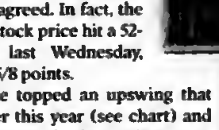
Change at Top Boosts Cabletron

Stock hits new high after Patel takes over as CEO

BY STEFANIE MCCANN

ANALYSTS were upbeat last week that the changing of the guard at Cabletron Systems Inc. [NYSE:CS] will bode well for the internetworking company. Wall Street agreed. In fact, the company's stock price hit a 52-week high last Wednesday, reaching 15 5/8 points.

That price topped an upswing that began earlier this year (see chart) and jumped on June 4, the day Craig Benson stepped down as CEO and Piyush Patel took over the reins. Shares closed at $14 that day, compared with about $9 just one month earlier.



The stock's 52-week low was 6 5/8 points on Aug. 8, 1998, and prior to last week's new high, the 52-week high had been 15 1/2 points on May 23.

Cabletron's weak stock performance earlier this year could have resulted from uncertainty about the company's plans. "There was concern about the company," says Chris Stix, an analyst at SG Cowen Securities Corp. in Boston.

But there's more activity — and plenty of speculation — now. For example, rumors have included the possibility that the Rochester, N.H., company will spin off its enterprise network management system, Spectrum, which manages LAN and WAN equipment, Stix says.

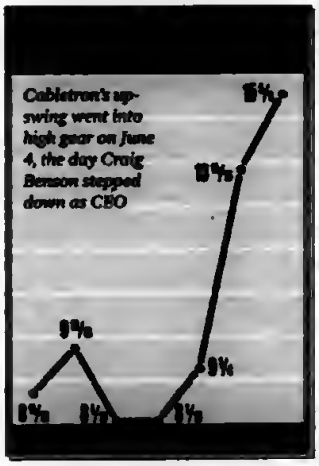
There has also been speculation that Cabletron is a takeover target, says Andy Schopick, an analyst at Westport, Conn.-based Nutmeg Securities Ltd.

Mission: Integration

Another initiative on the horizon is working with Compaq Computer Corp. to better integrate the companies' products, Patel told *Computerworld* (see related story, page 72).

In any case, analysts say they expect Cabletron to show an increase in earnings and revenue this quarter. At $1.38 billion, the company's revenue last year was down slightly from 1997, and last year's profit of $130 million was less than half of the $261 million reported in 1997.

And stronger results are a good thing on Wall Street. Once things start to settle down and all the rumors are ironed out, Stix says, "The stock could go as high as $20."



KEY (H) - New annual high reached in period
(L) New annual low reached in period

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Survey Says Corporate Users Satisfied with Java

But still disappointed on client side

BY CAROL SLIWA

As JAVA celebrates its fourth birthday, naysayers must be scratching their heads.

The programming language's creator, Sun Microsystems Inc., expects more than 16,000 developers — 5,000 more than last year — to turn out for this week's fourth annual JavaOne conference in San Francisco, along with about 325 exhibitors.

International Data Corp. in Framingham, Mass., forecasts the number of Java programmers worldwide will rise from 1.2 million to 4 million in 2003.

Though Gartner Group Inc. analyst Daryl Plummer estimates that only 15% of the corporate world uses Java for business-critical purposes, the Stamford, Conn.-based consultancy predicts that Java will provide mission-critical support in more than 60% of deployed applications after 2001.

"We have to give Sun credit. As many things as we criticize them for — because they overhype and overmarket Java — they made this thing real," said Jeffry Borror, director of information technology at Daiwa Securities America Inc. in New York. "It runs slow, but it runs — and it does run on all these platforms. We didn't have anything like this five years ago. None of us would have bet that it would do anything like this."

Indeed, most of the more than 50 corporate users surveyed by *Computerworld* expressed overall satisfaction with Java, especially in the area of developer productivity. Several also cited the benefits of code reuse and cross-platform performance on the server.

Surprisingly, even the most oft-bemoaned Java problem — performance — wasn't a major complaint among many corporate users, particularly on the server. They have been squeezing out performance with solid object-oriented, multitier architectures, middleware tools, faster Java virtual machines, just-in-time compilers, native compilers and various system tweaks.

Bass Hotels & Resorts, an Atlanta subsidiary of Britain-based Bass PLC, for instance, made a conscious decision to allocate extra memory to avoid garbage collection delays, use a native thread of execution and, where possible, distribute objects through sockets and other native operating system methods rather than using Remote Method Invocation, said Kas Naderi, senior director of emerging technologies.

And there are still some nagging issues with Java, ranging from its client-side performance and usage to something as simple-sounding as printing.

Among them, the biggest disappointment has been client-side Java, especially for users who hoped to handle client distribution through Java applets delivered to browsers.

They complain that applets take too much time to download and that the major browser vendors, Netscape Communications Corp. and Microsoft Corp., have been inconsistent with Java support.

That has led some firms to use smaller applets selectively and has driven others to avoid using Java in clients. AlliedSignal Inc.'s aerospace division in South Bend, Ind., opted for Sun's Java Plug-in to deliver a better virtual machine to end users, but that is generally effective only in a controlled intranet environment, said David Kulakowski, manager of mainframe technology.

The Swedish Stock Exchange uses stand-alone Java clients. But it requires end users to have a 200-MHz Pentium with 64M bytes of internal RAM to use its Java online trading application, said Peter Fredriksson, president of Stockholm-based OM Risk Management Systems AB.

Servlets, which are server-side components, provide a more cutting-edge workaround to some client dilemmas. Citicorp and DHL Airways Inc., for instance, use servlets to take data from the back end and transform it into the Web language HTML, which is pushed out to the client. JavaServer Pages, released earlier this month by Sun, are expected to further ease the problem.

But finding developers to build solid multitier Java applications can be tough.

"Everyone talks about 'Is Java ready?' and 'Is the platform stable and mature?'" Plummer said. "But the question is: Is the enterprise ready for Java? The answer is no."

Java Jolts

What are your greatest concerns about Java?

Speed/performance	40%
Standardization efforts	28%
Browser support from Netscape and Microsoft	26%
Microsoft hijacking the language	26%
Finding skilled developers	23%

How satisfied are you with Java in the following areas: **(1=not satisfied, 5=very satisfied)**

Developer productivity	3.6
Availability of tools and products	3.6
Overall satisfaction	3.5
Vendor support	3.4
Stability/maturity of platform	3.2

Base: Survey of 4817 managers at U.S. companies who are using Java; multiple responses allowed

SOURCE: COMPUTERWORLD IT INTELLIGENCE UNIT, FRAMINGHAM, MASS.

Continued from page 1

Wireless Java

services where you want a hassle. When you have a problem, you want it taken care of."

Building an application that could get quick response time while handling lots of data was no small task. To compound the problem, client resources were limited when McKesson started the project because the sort of rugged laptops the drivers needed didn't have the processing power generally available on workplace PCs.

But with help from Sun's Professional Service group, McKesson was able to pare the response time between the laptop and the host system to three seconds, officials said.

"We had to use different design approaches. You couldn't load the data and access it the way you normally do," Sunker explained. "We had to make sure everything was tuned. You couldn't be sloppy anywhere."

The system is in pilot now with two trucks; another eight will go live in the next few weeks; and 1,000 users will follow within six months. The water-products firm also plans to port the Java application to the Web so customers can gain access to data and may eventually communicate with drivers electronically, Sunker added.

McKesson's Java application features 60 graphical user interfaces, but with Java's code reuse capabilities, the chore of creating those screens was lessened considerably, Sunker said. "We could have written the whole thing in Visual Basic and done the interface in C++ to the wireless, but we didn't feel it would be as robust an application," he said.

The application's wireless aspect didn't make it any harder to build, but the company had to take into consideration that wireless technology is more costly to use. McKesson uses BellSouth's packet-based private wireless data network.

"As the cost per megabyte [of data] you're passing over the network goes down, it becomes feasible to build wireless applications for more business problems," said Phil Costa, an analyst at Giga Information Group Inc. in Cambridge, Mass.

Dulaney said he's been seeing laptop-based wireless applications used by police officers, appliance and utility repairmen and long-distance truckers. Based on market figures for ruggedized laptops, he said, he expects the trend to grow about 15% per year.

Java Enterprise Edition to Debut at Show

Java users will see two longtime concerns – performance and interoperable products – addressed at this week's JavaOne conference.

As expected, Sun will officially launch the Java 2 Platform, Enterprise Edition – the set of technologies that must be supported by any server-based software products that carry Sun's Java brand.

Dubbed J2EE for short, the Java 2 Platform, Enterprise Edition includes two key technologies that Sun advocates using for building Web applications: JavaServer Pages, for building the Web pages and Enterprise JavaBeans, for connecting to back-end services.

Oracle Corp. plans to release benchmark tests that claim Java applications with several thousand concurrent users can run six to 10 times faster on its Oracle JServer virtual machine running inside its Oracle 8i database compared with the way they run with other virtual machines.

Symantec Corp. will preview its Just-In-Time Java Compiler 4.0.

Apogee Software Inc. in Campbell, Calif., will announce its JDE integrated development environment for Sun's EmbeddedJava, PersonalJava and Java 2 platforms. – *Carol Sliwa and David Orenstein*

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Friend or foe?

POWER USERS. Are they your best buddies or your worst nightmare? Those tech-happy hobbyists in your company who will explore every nook and cranny of any new piece of software are about to drive you crazy again, this time with Microsoft's new Office 2000 suite. By the time you finish reading this, another power user in your organization is likely already well on the way to mastering Office 2000's new features — and probably blowing giant holes in your corporate security along the way.

The trouble this time? It's Office 2000's new ability to let users save their Word documents and Excel spreadsheets as Web pages directly to the Internet.

Sure, users have been able to generate Web pages from Word before. But now they can easily save those documents in HTML, the Internet programming language, and upload them to the Web in a single step. And then the Web versions are automatically kept synchronized with any changes made to the original version of the document.

See the problem? Users have all sorts of business-critical information in those documents. Contracts. Budgets. Projections. Proposals. Plans. Employee reviews. Trade secrets. The kind of inside information your competitors would love to have.

If it were conventional corporate data, you'd have it locked down tight. But it's not — it's in documents. And with Office 2000, it's extraordinarily easy for users to expose that information to exactly the eyes you don't want to see it.

And you *know* what will happen. Power users will shell out for their own copies of Office 2000 and sneak it onto their PCs at work. They'll experiment with jazzy features like online collaboration and saving to the Web long before they'll worry about security.

They'll put documents on unprotected personal Web sites, lose track of what's being automatically updated and generally put that document-based corporate information at risk. In short, they'll once again drive you crazy.

So what to do? You could try cracking down on unauthorized (by you) copies of Office 2000 in your company. You could force power users to strip the software off their machines. But good luck preventing them from buying and using Office 2000 on the work they take home.

Besides, crackdowns don't work. They didn't work when users smuggled in their own PCs, hacked out their own macros and spreadsheet formulas and built their own departmental Web sites. You'll just waste endless time chasing dowo reseotful, renegade power users — and they'll waste endless time finding new ways to elude you.

Maybe there's a better way. Maybe you should put those power users to work *for* you.

Recruit them to start testing Office 2000. Tell them to play with every feature in the package. Glue a help desk staffer to them to track everything they do with it. The power users will find the bugs, gotchas and idiosyncrasies — and your help desk will get practical knowledge long before most of your users get the software.

With Office 2000, power users can either ail you or assist you.

Those power users will also try out the save-to-Web features, but they'll do so under the watchful eyes of your IT shop. They'll figure out a dozen ways the rest of your users can use those capabilities. Then *you'll* work out how to keep those documents safe from prying eyes — *before* anyone starts using those functions with live documents.

The process won't be pretty. Power users like to push the limits. IT people want to protect the company jewels. Those desires are diametrically opposed.

But even if they're still your worst nightmare, think of it this way: You want to keep your users close — and your power users closer. ▸

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SHARK TANK

HOTSHOT MANAGER, fresh out of college. All charged up about quality. He gets a brainstorm and issues a decree: From now on, develop software "in such a way as to capture the error just before it occurs." Sure, Junior. Now run along and play with your TQM while us grown-ups try to get some work done. (Thanks go out to Tankster Mahesh for this one.)

THAT'S NOT CRICKET
Over in England, a legal-but-it-still-stinks scam called "stiffing" is costing companies prodigious pounds. Works like this: value-added resellers and systems integrators demand big penalty fees when customers violate software license fine print in a merger or reorg. Sharky hears one outfit got poleaxed with a $2.5 million (that's Yankee dollars, mate) tab just for changing its name. Time to check those contracts – especially the old ones we signed back in simpler days.

EVERYBODY'S ALL HOT AND BOTHERED over those rent-an-application programs. Sorry, kids – been there, done that. Remember AT&T's Network Notes service for Lotus Notes? It came and went in 1994. The same year, Microsoft and MCI almost nailed down a deal in which MCI would host BackOffice, but it fell through. Hey, let's spin the Wheel of Fads again . . .

MEMO TO MICROSOFT PR: Get some tech support off to New York, pronto. Radio talk king Rush Limbaugh last week launched an on-air tirade about Microsoft Exchange, which he said insists on printing 10 copies of a document every time he uses the "print" shortcut. Whatever you Seattle Starbucks sippers think of Limbaugh's politics, Maha-Rushi has some 14 million listeners – and he's a vocal Microsoft fan. Was until now, anyway.

FREEBIE OF THE WEEK: Input, a market research outfit in Mountain View, Calif., would love to charge you $2,500 for its new report on SAP implementations in the U.S. But a sharp-eyed (and bargain-hunting) friend of the Tank noticed that most of the key survey data was already used – with identical wording, no less – in an April buyer's guide that you can download free (as long as you're willing to fill out a guest registration form) at *www.input.com.*

Consider Sharky properly upbraided by pilot fish Warren for misusing the phrase "anonymous e-mail." Tank e-mail is not actually anonymous – but it might as well be. Sharky sees your name, but he solemnly vows to divulge nothing. Feel free to rat out your least favorite boss or vendor: **sharky@computerworld.com.**

The 5th Wave

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E-mail Rich Tennant at the5thwave@rtlac.net

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